

**Illinois Commerce Commission
Initiative on Plug-In Electric Vehicles**

**Report and Recommendations
March, 2012**

Executive Summary

Background

The Illinois Commerce Commission Initiative on Plug-In Electric Vehicles (Initiative) was formed in September, 2010 to ensure that the Commission is proactive in assessing the potential impacts of plug-in electric vehicles (PEVs) on the State's electric system and to help guide the Commission in understanding and beginning to consider future regulatory issues necessary to accommodate this new mode of transportation.

To begin the process, the Commission requested that Ameren, ComEd, and MidAmerican prepare Initial Assessments of PEV-related issues. The Commission then invited stakeholders to provide comments on those Assessments and held a Policy Committee meeting for stakeholders to discuss their views with the Commission. In the summer of 2011 the Commission asked the utilities and stakeholders to provide comments on an additional set of questions, and held a follow-up Policy Committee meeting.¹

The input the Commission received from the Assessments, comments, and Policy Committee meetings led to the formation of five stakeholder-led Workshops in the fall of 2011. The specific work done by the Workshops is outlined in the body of this report. Workshop #1 focused its efforts on the Commission's Integrated Distribution Company (IDC) rules; Workshop #2 collaborated to discuss the best customer education and outreach plans for PEV purchasers; Workshop #3 was dedicated to assessing potential reliability impacts of PEV usage; Workshop #4 studied the best rate options for PEV users; and Workshop #5 explored the legal status of public charging stations. The Commission asked Workshop participants to address several specific areas that the Commission noted required further exploration. Among those focus areas were the following: the legal status of public charging stations, electric rate options, reliability impacts, education, and the potential need for revisions to the rules governing the utility marketing of PEV-related programs. Those Workshops reached a variety of conclusions that largely reaffirmed existing policies and practices in Illinois. Based on this collaborative process the Workshop participants also offered several specific recommendations to the Commission on these issues.

¹ The Initial Assessments, comments, Policy Committee transcripts, and other documents of the Initiative can be located at: www.icc.illinois.gov/Electricity/PEV.aspx.

Workshop Recommendations

All five Workshops provided the Commission with reports which are attached as appendices to this report. However, there were three main recommendations that the Commission had to consider. Those three recommendations came from Workshops 2 and 5. The Commission has considered and adopts the following ICC Workshop recommendations:

- 1. Workshop #2 (Education/Customer Outreach):** The Commission should continue its active participation in the Electric Vehicle Advisory Council.

The Commission plans to continue to participate in the Electric Vehicle Advisory Council.

- 2. Workshop #2 (Education/Customer Outreach):** Consumer education and interest will be positively impacted by a reference to PEVs on the Commission's Plug In Illinois Website.

The Commission's Office of Retail Market Development maintains the Plug In Illinois website that provides information about retail supply options for residential customers and it is planning to incorporate information relevant to PEV owners. The Commission deems this recommendation to have merit and approves its inclusion on the ICC website. The Commission is convinced that such timely information will further the knowledge base of Illinois consumers regarding the status of PEVs in our state.

- 3. Workshop #5 (Legal Status of Public Charging Stations):** The Commission [should] coordinate with the Illinois Electric Vehicle Advisory Council to explore recommending new state legislation, promoting uniformity of policies and laws assuring the continued development of an accessible and convenient Electric Vehicle Equipment and Service Provider charging network throughout Illinois supported by open and competitive markets.

The Commission will review and consider support for legislation that clarifies the legal status of public charging stations. However, support is dependent on the specific provisions and requirements of any such proposal. While the Commission will coordinate where appropriate with the EVAC, as an independent State agency the Commission has its own legislative review process.

PEV Charging Rates

Many other States have focused their PEV policy efforts on the introduction of special time-variant rates for PEV owners that are intended to facilitate off-peak charging. The Rates Workshop reaffirmed that customers of ComEd and Ameren already have a real-time pricing option that serves this role and that MidAmerican offers a time-of-use rate.

There is also evidence from other States that Alternative Retail Electric Suppliers (ARES or RES) will offer time-variant rates as smart meters become available. The combination of existing utility-offered rates, and the rapidly growing competitive retail market for electricity, places Illinois in a strong position in terms of providing the correct price signals to PEV owners for their vehicle charging needs.

Electric Vehicle Advisory Council

After the commencement of the Initiative, Public Act 97-0089 was enacted that established the Electric Vehicle Advisory Council (EVAC). The Executive Director of the ICC was designated as one of the members of the Council. The EVAC issued a report with recommendations to the Governor and General Assembly in December, 2011. Several recommendations involve the ICC and are discussed in this report.

Conclusion

The PEV Initiative has largely reaffirmed that many existing policies in Illinois are well suited for the introduction of PEVs, and that the regulatory issues that need to be addressed are either narrowly focused, or longer term in nature.

The Commission appreciates all the hard work that stakeholders have put into participating in the various phases of the Initiative. Their efforts have provided the Commission with valuable information and a clear path on which to proceed. The Initiative will periodically reconvene to explore emerging and developing PEV policy issues germane to the Commission's regulatory authority.

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Workshop Reports

1. Defining the scope of what waivers (if any) to the Integrated Distribution Company (IDC) rules would facilitate utilities' role in facilitating the adoption of PEVs and related services
2. Developing customer education and outreach plans
3. Modeling and assessment of potential localized reliability impacts
4. Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization, and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging
5. Developing a petition to the Commission to clarify the legal status of public charging stations

Illinois Commerce Commission Initiative on Plug-In Electric Vehicles

Report and Recommendations March, 2012

Formation of the Initiative

The Illinois Commerce Commission (ICC or Commission) Initiative on Plug-In Electric Vehicles (Initiative) was formed in September, 2010 with the intention of helping the Commission be proactive in assessing the potential impacts of plug-in electric vehicles (PEVs) on the State's electric system, and to help guide the Commission in understanding and beginning to consider future regulatory issues necessary to accommodate this new era of transportation. The Initiative is co-chaired by Chairman Doug Scott¹ and Commissioner Erin O'Connell-Diaz.

When the Initiative was first established its goals/objectives were to:

- Determine the impact of the initial deployment of PEVs on the State's electric grid
- Determine potential/future regulatory considerations necessary to accommodate PEVs
- Establish consistent Statewide policies for managing PEV infrastructure and use
- Generate accelerated interest by auto manufacturers for introduction of PEVs into Illinois markets
- Craft consumer education and outreach information components

It was anticipated that the Initiative would:

- Develop Statewide standards/best practices for integration of PEVs into the electric grid
- Develop a Statewide policy framework for adoption of PEVs
- Initiate an infrastructure improvements strategy to maintain safe and reliable system operation
- Increase PEV auto manufacturer interest for launching PEV roll-out in Illinois
- Improve customer education and awareness of this new green mode of transportation

Initial Assessments and Comments

The Initiative has been conducted through a series of inquiries from the Commission and responses from utilities and stakeholders. The first was a request to Ameren Illinois

¹ In March, 2011 Chairman Scott replaced Acting Chairman Manny Flores who was initially the Co-Chair of the Initiative.

Company (Ameren), Commonwealth Edison Company (ComEd), and MidAmerican Energy Company (MidAmerican) (collectively, the utilities) for Initial Assessments. That request was issued in September, 2010. The request specified an interest in early (e.g., next two years) action items on the following topics:

1. Distribution system impacts
2. Rate options
3. Public charging infrastructure deployment
4. Clear adequate information to obtain necessary utility service and third-party equipment for in-home/business charging

The utilities were asked to provide specific responses, to the extent possible from existing data and information, on the following subjects:

1. A discussion of the Commission's jurisdiction and role over the development of electric vehicle charging infrastructure and the provision of electric vehicle charging services, including a discussion of the legal status of the entities that offer such services;
2. A projection of the number, location and timing of customers adding electric vehicles to the utility's system based either on surveys of the utility's customers or other available data;
3. An analysis of any distribution system upgrades necessary to ensure that the distribution system is able to accommodate the anticipated number of electric vehicles without disruption in service for any customer;
4. An analysis and assessment of dynamic, real-time or time-of-use pricing to enable the use of plug-in electric drive vehicles to contribute to meeting peak-load demand reduction, ancillary service power needs, energy efficiency and/or other programs to minimize the need for existing infrastructure upgrades;
5. An analysis of any other equipment and technology, other than rates, that may encourage owners of electric vehicles to charge in a manner that avoids detrimental impacts on the distribution system, transmission system and bulk power system and assists in the integration of renewable resources;
6. An analysis of the need for separate metering to track usage of electric vehicles;
7. An assessment of public and private electric charging infrastructure necessary to support deployment of electric and hybrid electric vehicles;
8. A description of any regulatory barriers that might create unnecessary delay for consumers for installation of at-home charging infrastructure;
9. A description of the utility's system-wide fuel profile, including the proportion of electricity generated or purchased from coal, natural gas, and renewable sources during peak and off peak periods and by season;

10. A discussion of how the utility plans to comply with any regulations that may be issued by the Federal Energy Regulatory Commission pursuant to Section 1305(d) of the Energy Independence and Security Act of 2007, to the extent such regulations are known, concerning the protocols and standards for integrating plug-in electric vehicles into an electrical distribution system, including Smart Grid systems and devices as described in Title XIII of the Energy Independence and Security Act of 2007, in 2011 and thereafter; and
11. A summary of organizations consulted on the development of each plan, including appropriate environmental, civic and consumer organizations, as well as any existing organizations within each utility's service territory that advocate for or represent an interest in electric vehicles.

The Initial Assessments were received by the Initiative in December, 2010. The Commission then requested interested parties to provide comments on the Initial Assessments by the end of January, 2011.² Comments were received from the BlueStar Energy Solutions (BlueStar), the Citizens Utility Board (CUB), the City of Chicago, CNT Energy/I-Go, the Environmental Law and Policy Center (ELPC), the Galvin Electricity Initiative, the Illinois Competitive Energy Association (ICEA), and the Natural Resources Defense Council (NRDC). The full Commission subsequently held a Policy Committee meeting on March 9, 2011 to discuss the Initial Assessments and comments. BlueStar, the City of Chicago, CNT Energy/I-GO, CUB, ELPC, ICC Staff, ICEA, NRDC, and the utilities participated in the meeting.

Follow-up Request for Additional Information

In response to the information gathered in this first phase of the Initiative and at the March 9th Policy Committee meeting, in July, 2011 the Initiative issued a more focused request for information regarding the following specific issues:

- The appropriate regulatory paradigm (if any) for private and public charging stations.
- In order to facilitate the charging of electric vehicles that provides the maximum societal, environmental and economic benefits, what modifications (if any) should be made to existing utility rates? In addition, what metering options and charges should be considered while taking into account the existence of competitive retail suppliers?
- What cost causation and rate design modifications will be required to handle distribution upgrades for increased penetration of higher voltage at-home charging?

² The Initial Assessments and subsequent comments referenced in this report can be located at: www.icc.illinois.gov/Electricity/PEV.aspx.

- Which costs, if any, should be socialized and why (rationale, benefits, etc.)? Assuming there are costs to be socialized, what are the proper methods for such allocation?

Comments were received from Carbon Day, the City of Chicago, CNT Energy/I-Go, CUB, the Electric Vehicle Service and Equipment Provider Coalition, ELPC, Environmental Defense Fund (EDF), ICEA, Illinois Science and Technology Coalition (ISTC), NRDC, and the utilities. A Policy Committee meeting was then held on August 23, 2011 to further discuss these issues. Carbon Day, the City of Chicago, CNT Energy/I-Go, CUB, EDF, ELPC, ICEA, the Illinois Department of Commerce and Economic Opportunity (DCEO), ISTC, NRDC, and the utilities participated in that meeting.

Summary of Assessments and Key Issues of Discussion

The Initial Assessments prepared by Ameren, ComEd, and MidAmerican covered the wide range of topics requested by the Initiative. Of particular note were the analysis of the legal/jurisdictional issues for public charging stations, forecasts of adoption rates for PEVs in each utility's service territory, analysis of the impact of dynamic/real-time pricing structures, and the potential impact of PEV introduction on local distribution systems. While the Initial Assessments and subsequent comments and discussions at Policy Committee meetings covered additional issues, these primary issues will be discussed here in more detail.

Notably, the Initial Assessments were the first coordinated analyses of PEV issues in Illinois and provided a baseline of data that was previously unavailable to the public. The Initial Assessments from the utilities and the subsequent follow-up comments from stakeholders contained a high degree of overlap of opinions on many issues. This report contains a synthesis of the opinions in the Initial Assessments and subsequent rounds of comments that provide an overview of the activities of the Initiative. The Initial Assessments, stakeholder comments and transcripts of Policy Committee meetings are all available on the Initiative's website, www.icc.illinois.gov/Electricity/PEV.aspx.

In general, stakeholders expressed interest in the potential positive benefits of PEVs. While there were a range of opinions on the rate of adoption of PEVs, differing levels of interest in the coordination of PEVs with renewable energy sources and demand response programs, and some differing views on rate options and related issues for PEVs, there were no stakeholders who expressed opposition to the formation of policies to encourage the broader adoption of PEVs. No stakeholder expressed an opinion that the addition of PEVs to the electric grid would create insurmountable problems or that it was not a good public policy goal.

Legal Status of Public Charging Stations

All three utilities provided extensive discussion regarding their views on what regulatory framework should cover public charging stations. However, neither the utilities nor other stakeholders could state with absolute certainty what that framework was. As MidAmerican cautioned, "...current statutes could be interpreted to require either public utility or alternative retail electric service provider status for the providers of public charging services."³ While a variety of critiques to this interpretation were offered, the lack of clarity and certainty on this issue existed throughout the various rounds of comments and discussion during the Initiative. After much consideration and discussion the overall consensus of the parties leaned towards an outcome that the Commission not regulate public charging stations. Ultimately the resolution of this issue, be it through Commission action, or changes to the Illinois Public Utilities Act,⁴ was an issue that the Initiative deemed appropriate to be addressed in a Workshop format in order to develop it into a more detailed recommendation.

Adoption Rates

A projection of adoption rates for a new technology is a difficult task and each utility reviewed a variety of public sources (e.g., reports from national firms and organizations such as KEMA, IDC, EPRI, and EEI) as well as internal research to develop estimates. Both Ameren and MidAmerican cautioned that just prorating national forecasts to their service territories was problematic due to issues of regional variation that led them to conclude that their service territories would have adoption rates lower than national averages. MidAmerican estimated a five year adoption rate of 200 vehicles with an added peak load of 400 kW.⁵ Ameren estimated a range of 42,326 to 64,130 PEVs by 2015 with an added peak load of 76 to 115 MW. ComEd provided an analysis with a wider range due to more variables factored in. Based on an extrapolation of U.S. PEV sales projections, ComEd estimated that by 2020 a range from 32,000 to 300,000 PEVs on the road in its service territory was possible. Subsequently, in the Reliability Workshop a new estimate of PEV adoption rates in Illinois was developed which was based on more recently issued national forecasts that were developed by EPRI. That estimate was for somewhere between 110,000 and 415,000 PEVs in Illinois by 2020. This broad range indicates an ongoing uncertainty when forecasting PEV adoption rates.

Stakeholders appeared to have no significant concerns with these forecasts and discussion of these forecasts after the Initial Assessments was limited.

³ MidAmerican Initial Assessment, p. 2.

⁴ 220 ILCS 5/1-101 *et seq.*

⁵ MidAmerican provided an analysis for their entire service territory which suggested 2,000 vehicles and 4 MW of added peak demand. The Illinois portion of their service territory is approximately ten percent of their customers and the numbers here are extrapolated to just the Illinois portion.

Impact of Dynamic Pricing/Real-time Pricing Rates

One of the key areas that a regulatory agency such as the Commission will have jurisdiction over that relates to PEVs is the rates used for charging. Many states promoting the adoption of PEVs have focused their efforts on developing new rate options to incent off-peak PEV charging by PEV owners. Illinois faces a slightly different set of issues related to the exploration of new rate options. First, it is a retail choice state where for Ameren and ComEd, new products and services are expected to be provided by the competitive marketplace, and there are restrictions regarding the marketing and promotion of supply services by utilities. Second, Ameren since 2007, and ComEd since 2003, have had in place optional real-time pricing rates.⁶ MidAmerican follows a different regulatory structure because it remains a vertically integrated utility that owns its own generation. Retail choice is not available for its customers, but a time-of-use (TOU) rate option is available. For these reasons, the Initiative requested the utilities to first model how these existing dynamic pricing rate options would impact the charging of PEVs compared to the otherwise applicable flat electricity rate.

MidAmerican does not have a real-time pricing option. MidAmerican noted that in comparison to its generally low flat residential rate that its existing optional TOU option might not work well due to the structure of the demand charge portion of that rate.

Ameren provided an analysis of the incremental electricity that would be needed to charge a PEV at home under a standard flat rate, and various real-time pricing charging patterns. Ameren modeled a customer who would otherwise spend \$800 a year on gasoline, but with their PEV used an additional 3,000 kWh per year. If the customer were not on a special rate for electric heating, they would spend between \$115 and \$158 per year on electricity (depending on the geographic rate zone) for PEV charging under the current flat rate, but as low as \$66 to \$87 for “super off-peak” charging, and between \$94 to \$115 for more typical off-peak charging.

ComEd modeled several scenarios. The first ComEd model estimated a higher use of electricity for PEV charging than the Ameren model; 5,548 kWh per year for Level 1 charging. Under the ComEd model the flat rate would have cost \$394 per year while the real time pricing would cost between \$205 and \$287 depending on charging time. An additional factor would be the cost of the capacity obligation included in real time rates. If a customer kept charging at off-peak times, the capacity component of the real time rate would cost only \$130 per year, while if charging took place at peak times (e.g., 5pm) it could be as much as \$197 per year. The second ComEd model was for a

⁶ Both utilities have basic real-time pricing tariffs available to all customers. Public Act 94-0977 added additional optional program elements and features for residential customers. Those programs are currently undergoing a statutorily-mandated evaluation and review in Docket Nos. 11-0547 (Ameren) and 11-0546 (ComEd).

customer using Level 2 charging and estimated 10,512 kWh per year of usage. This model would cost \$782 on the flat rate and between \$502 and \$709 on a real-time rate. The capacity component of the real-time rate would range between \$220 and \$426 per year again depending on if the charging was done on-peak or off-peak.

Both the Ameren and ComEd analyses were based upon historical pricing patterns. While it is well established that wholesale electricity prices (which form the basis of real-time prices) vary by the hour and are lower at night and on weekends, the specific level of those prices compared to the flat rate does vary and cannot be guaranteed in the future.

The level of potential savings demonstrated by these models of existing real-time pricing options carried through to a general consensus in subsequent comments and discussion about the value of dynamic pricing in general, and real-time pricing in particular. The issue was further discussed during one of the Workshops. Several stakeholders also noted that the IDC regulations could have an impact on how any new rate options are offered, and this also was a topic addressed in one of the Workshops.

The analysis in the Initial Assessments focused on typical residential charging rates because a variety of national studies have indicated that most charging of PEVs will occur in the evening and at home each night. However public charging stations are anticipated to provide an important additional charging option for PEV owners who need to replenish their batteries while away from home. As discussed in the public charging section, the general sentiment is that public charging stations will be provided by the competitive market and not by utilities. Public charging stations will be located at commercial locations, and therefore will have the option of either default electric supply service from the utility, or supply from an ARES. However several parties noted that adding high voltage DC quick charging options at public charging stations could have an impact on the regulated distribution rates for those locations.

Local Distribution System Impacts

All three utilities expressed optimism that their distribution system could handle the additional load from PEVs, while conceding the possibility of sporadic localized issues with transformer overloads from Level 2 charging. ComEd suggested that the use of direct load control technology could mitigate this impact, while ComEd and Ameren recommended that notification of the purchase of a PEV could help the utility plan for possible upgrades. Stakeholders likewise expressed interest in using demand response programs to help mitigate distribution system impacts.

It appears that the utilities are confident in their planning processes to handle localized distribution impacts. The question of how costs are recovered for handling those impacts was explored in the second round of comments. In general, existing regulatory

principles related to cost causation were considered appropriate for the case of PEV charging and other models of socializing costs are unnecessary. The Initiative appreciates the analysis conducted by the utilities on the issue of local reliability. Ensuring reliability is a key duty of the Commission and the Initiative requested a Workshop to continue to explore the issue of how to best address it.

Other Issues

A variety of additional issues were raised by stakeholders. These included:

- The intersection of renewable energy and PEV charging including net metering, photovoltaic integration with public charging stations, and vehicle to grid functionality
- Education efforts to promote PEVs
- Metering issues related to PEVs
- Coordination with the Secretary of State and other agencies to aid utilities in knowing where PEVs and associated charging infrastructure is being installed
- Building codes and local permitting issues. In general there was interest in better coordination of these issues, but these issues fall outside the regulatory purview of the Commission
- Privacy, access to data and information protocols

The Initiative had a Workshop to explore education issues, and to a limited extent metering issues were discussed in the Rates Workshop, but otherwise the Initiative is not actively pursuing the other topics listed. Some of these issues have been taken up by the Electric Vehicle Advisory Council discussed below. The input of stakeholders on these issues is duly noted and appreciated by the Commission and where appropriate, they may be taken up at a future time.

Formation of Stakeholder-led Workshops

In October, 2011 the Initiative requested that stakeholders participate in five informal stakeholder-led Workshops to explore more thoroughly relevant issues and return findings to the Initiative with proposed recommendations. The five topic areas for these Workshops were:

1. Defining the scope of what waivers (if any) to the Integrated Distribution Company (IDC) rules⁷ would facilitate utilities' role in facilitating the adoption of PEVs and related services;
2. Developing customer education and outreach plans;

⁷ Title 83, Sections 452.230 and 452.240 of the Illinois Administrative Code. IDC rules govern the limitation that Ameren and ComEd have on marketing rates, programs and services so as not to impede the development of competitive retail electricity markets.

3. Modeling and assessment of potential localized reliability impacts;
4. Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization, and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging; and
5. Developing a petition to the Commission to clarify the legal status of public charging stations.⁸

A kick-off meeting for the Workshops was held on October 13, 2011 and facilitators for each Workshop selected. The Workshops met from November, 2011 through February, 2012, and issued reports to the Commission. In general, the Workshops had few specific recommendations for Commission action, but rather reached a variety of conclusions (mostly, but not completely, with consensus) that indicated that existing policies and practices in Illinois are adequate for facilitating the adoption of PEVs. Specific recommendations and conclusions are discussed below.

Workshop Conclusions and Recommendations

Full reports from the five Workshops are available at:

<http://www.icc.illinois.gov/Electricity/PEV.aspx>. Below is a summary of the key conclusions and recommendations from the Workshops. The Commission accepts all of the specific recommendations discussed herein.

Workshop #1: Defining the scope of what waivers (if any) to the Integrated Distribution Company (IDC) rules would facilitate utilities' role in facilitating the adoption of PEVs and related services

Workshop #1 had the purpose of monitoring the recommendations of the other Workshops to determine what, if any, impact those recommendations would have on the current Integrated Distribution Company (IDC) rules. The IDC rules govern the actions of Ameren and ComEd as they relate to fostering competition and retail choice in Illinois. Currently ComEd has a waiver of IDC rules for the marketing of its residential real-time pricing program. Ameren does not have a waiver for its residential real-time pricing program. Based on a review of those programs, and of the conclusions of the other Workshops, Workshop #1 concluded that currently there is not a need for a waiver for Ameren, nor is there a need for an expansion of ComEd's waiver, in order to facilitate the adoption of PEVs and related services. The Workshop did note that in response to future policy mandates, this conclusion may need to be reconsidered.

⁸ For further description of the scope of each of these topics, see document "ICC To Host Plug-In Electric Vehicle Workshop" at <http://www.icc.illinois.gov/Electricity/PEV.aspx>.

Workshop #2: Developing customer education and outreach plans

Workshop #2 provided two recommendations to the Commission:

1. “The Commission Should Continue its Active Participation in the EVAC” (p. 10)⁹
2. “The Commission Should Consider Referencing PEVs on the Plug In Illinois Website” (p. 11)

The Commission finds those recommendations reasonable, and will adopt them. The Commission was already planning on continuing its involvement in the EVAC, and reaffirms that commitment.

The Office of Retail Market Development (ORMD) maintains the Plug In Illinois Website which provides information and education to customers on the electric supply options. ORMD will update the website to add information relevant to PEVs.

Workshop #2 also reached several other conclusions that were not in the form of recommendations to the Commission, and therefore require no Commission action. First, the Workshop concluded that, “We do not recommend that the Commission take a prescriptive approach to consumer education.” (p. 2) The Commission appreciates the Workshop’s flexible approach to planning consumer education that is subsequently detailed in their report. The report describes the educational content the Workshop expected would be needed by PEV consumers and the expected messengers. The content included: basic information about PEVs, general vehicle charging options, residential charging, real-time pricing and other rate options, utility notification (e.g., notification by the PEV owner to the utility about installation of Level 2 and higher charging stations), public and workplace charging, and renewable energy/net metering. Messengers were categorized to include Utilities and/or ARES; Auto Manufacturers and/or Dealers; State Government; Local Governments; Environmental/Public Interest Groups; First Responders; Educational Institutions; and Charging Station Businesses.

Second, the Workshop suggested that, “[T]he Commission is encouraged to continue its existing pattern of inquiry into PEV integration, ensuring that PEV information provided by entities under its jurisdiction provide accurate and useful information to customers, particularly on the topics of time-of-use rates and off-peak charging.” (p. 10) The Commission expects that the PEV Initiative will continue and at appropriate times will continue to explore critical issues. In addition, ICC Staff is already engaged in monitoring and studying a variety of PEV related issues both in Illinois and nationally.

⁹ Page references refer to the Workshop Reports that are available in the Appendices of this Report.

Workshop #3: Modeling and assessment of potential localized reliability impacts

Workshop # 3 did not provide any specific recommendations to the Commission. The report outlines the PEV industry landscape, existing load addition processes used by the utilities, potential distribution system impacts, and availability of load management tools.

The report states that given the projections for PEV adoption shown in the report, “PEV charging is not expected to have widespread impacts to the distribution system.” (p. 14) However the report goes on to say that, “since PEV adoption is likely to be “clustered” by geographic area and subsequently by distribution system components, local distribution assets could be impacted if PEV charging at Level 2 (240 volt, 30 amps) or greater is not appropriately managed” and that, “The Impact Study that ComEd conducted with EPRI identified service transformers as particularly vulnerable to impacts of Level 2 charging.” (p. 16)

With respect to managing the impacts of PEV charging on the grid, the report states that, “effective load management tools will be important to mitigate impacts of EV charging not only to the PEV owner, but to other customers served by the same distribution equipment.” (p. 17) The report goes on to discuss time-variable rates, advance notification to the utility prior to installing PEV charging rated at Level 2 or greater, and advanced metering infrastructure (AMI) as effective existing and future load management tools.

The report concludes, “Given the projections for PEV adoption discussed in this document, PEV charging is not expected to have widespread distribution system impacts for Ameren Illinois, ComEd, or MidAmerican. The utilities have existing load addition processes in place to manage the addition of charging facilities that may occur in the near term, and they continue to investigate new technologies and tools that may facilitate more automated and seamless integration of PEV charging with the grid as PEV adoption become more widespread in the future.” (p. 20)

The Commission notes one potential area of concern. In discussing the existing processes for load additions, the report states that, “ComEd expects that any customer that is adding enough load that it could impact the utility system will likely be using a qualified electrician. ComEd also expects the electrician will be familiar with ComEd’s processes for load additions and the need to contact to ensure adequate distribution facilities.” (p. 13) However, the report does not discuss what will happen if those

expectations are not met, and electricians fail to have the adequate training or knowledge, or if they fail to follow ComEd's established processes.

The licensing and regulation of electricians that could address that concern is generally outside the jurisdiction of the ICC; however, recently enacted Public Act 97-0616 contains the provision, "Within 180 days after the effective date of this amendatory Act of the 97th General Assembly, the Commission shall initiate a rulemaking proceeding to establish certification requirements that shall be applicable to vendors that install electric vehicle charging stations." (220 ILCS 5/16-128A(d)) While that rulemaking has not yet commenced, and therefore the scope of it has not yet been determined, it is possible that the rulemaking may serve as a vehicle to help address this issue.

Workshop #4: Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization, and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging

Workshop #4 did not provide any specific recommendations. Instead the Workshop thoroughly explored rate options to consider if there were any "known statutory or regulatory barriers" to either supply services or demand response programs that could improve current distribution, transmission and generation asset utilization and could prevent unnecessary and duplicative investment in infrastructure for on-peak charging. Given that Illinois is a restructured State with unbundled electricity rates, supply and distribution issues were considered separately. The consensus of the Workshop was that for both residential and non-residential customers there were not any known barriers for either supply services or demand response programs.

While not a recommendation to the Commission, perhaps the most significant conclusion of the Workshop's report is its consideration of existing rate options in Illinois, and how the availability of those rate options sets Illinois apart, and ahead of, other States. The report notes that, "Regarding residential supply services, the consensus was largely based on the belief that sufficient supply offerings are or will be available in the future. Specifically, the existing residential Real-Time Pricing Programs (RTP) available from Ameren Illinois [Company (AIC)] and Commonwealth Edison (ComEd) today, and/or the potential for future time-variant price offerings from RESs, as evidenced by offerings available in other states meet these objectives." (p. 3) Many other states that have considered PEV policies have focused that consideration on introducing time-variant pricing for PEV owners as an incentive for off-peak charging. The confidence the Workshop had that existing (and potential) offerings in Illinois are sufficient in this regard, indicates a significant departure for Illinois from the approaches being undertaken elsewhere. Existing Illinois policies that promote the use of real-time

pricing and of competitive retail choice have already created a roadmap for customers to best match their electric supply to their PEV charging habits.

Workshop participants did, however, express interest in ongoing monitoring of rate options, agreeing, “that further study of PEV charging and rates should be conducted in the near-term and over the next several years, as PEVs begin to arrive in Illinois. Specifically, the group agreed that customer acceptance and utilization of, and responsiveness to, available time-variant pricing structures should be monitored and reviewed regularly.” (p. 3) While there is not a specific recommendation to the Commission in that statement, the Commission will encourage ongoing study of and experimentation with time-variant rates.

The Workshop also noted that, “While no stakeholder advocated making time-variant supply pricing mandatory for EV owners at this time, the group did identify a need to incorporate time-variant supply pricing options into PEV owner education plans as soon as possible.” (p. 4) This issue was covered by the Education Workshop in more detail.

The Workshop also considered issues relating to delivery services rates, specifically those relating to unbundling metering and the potential for “subtractive metering” where PEV load would be separately tracked from other load in order to facilitate vehicle to grid transactions. Workshop participants did not agree on the near-term relevance of the issue, but agreed that “there are no known legal or regulatory impediments to the adoption of a Commission policy mandating unbundled subtractive metering. In fact, the Commission has already exercised its authority to unbundle metering (See *generally* ICC Docket No. 99-0013, Order (Oct. 4, 2000)), although not in a subtractive context.” (p. 6) As the PEV industry evolves and vehicle to grid options move from theory to reality, this issue may require further investigation, but at the present time it appears that no action is required by the Commission.

Workshop #5: Developing a petition to the Commission to clarify the legal status of public charging stations

Workshop #5 explored ways in which the legal status of public charging stations could be clarified. The Workshop started with the concept of a petition to the Commission for a declaratory ruling, but because of Commission rules that were interpreted to mean that, “a declaratory ruling only has a binding legal effect on the party making the filing,” (p. 2) the Workshop chose not to further pursue that option because its limited scope would not fully address and resolve the issue.

The Workshop subsequently explored legislative approaches instead, concluding that, “The workshop participants agreed that legislation pertaining to charging stations adopted by the General Assembly would be the most direct way to determine the extent, if any, of the Commission’s jurisdiction over charging stations.” (pp. 3-4) However there was not a consensus conclusion for seeking such legislation, with one participant believing it was premature to do so.

The Workshop recommended, with the caveat that one party thought that it was premature, “That the Commission coordinate with the Illinois Electric Vehicle Advisory Council to explore recommending new state legislation, promoting uniformity of policies and laws assuring the continued development of an accessible and convenient EVESP¹⁰ charging network throughout Illinois supported by open and competitive markets.” (p. 4) The Workshop further noted that, “If the General Assembly were to take up this issue, consideration should be made for an Electric Vehicle Equipment and Service Providers (EVESPs) exemption under the Public Utilities Act for EVSP companies that simply wish to act as customers of utilities or RESs.” (p. 4) The Commission will review and consider support for legislation that clarifies the legal status of public charging stations. However, support is dependent on the specific provisions and requirements of any such proposal. While the Commission will coordinate where appropriate with the EVAC, as an independent state agency, the Commission has its own legislative review process.

Electric Vehicle Advisory Council

While the PEV Initiative was underway HB 2902, the “Electric Vehicle Act” was passed by the Illinois General Assembly and signed into law as Public Act 97-0089 by Governor Quinn on July 11, 2011.¹¹ This bill established the Electric Vehicle Advisory Council (EVAC) coordinated by DCEO. The Executive Director of the ICC was designated as one of the members of the Council. The Council has the mission to, “investigate and recommend strategies that the Governor and the General Assembly may implement to promote the use of electric vehicles, including, but not limited to, potential infrastructure improvements, State and local regulatory streamlining, and changes to electric utility rates and tariffs.” The EVAC provided a report to the Governor and General Assembly on December 30, 2011.¹² The EVAC continues to meet to monitor the implementation of the report’s recommendations and related matters.

When the Commission launched its Initiative, it was the only state-wide forum for PEV issues. It therefore set out with a fairly broad focus, in contrast to local initiatives such

¹⁰ Electric Vehicle Equipment and Service Providers

¹¹ See: <http://www.ilga.gov/legislation/publicacts/97/PDF/097-0089.pdf> for the full text of this legislation.

¹² The EVAC report is available at: http://www.ildceo.net/dceo/Bureaus/Energy_Recycling/ev.htm.

as those that are being undertaken in cities like Chicago and Normal. Given the creation of the Electric Vehicle Advisory Council and the information the Initiative had received from the utilities and stakeholders, in the fall of 2011 the focus of the Initiative was narrowed to issues that were under Commission jurisdiction. This allowed the ongoing conversations about other related PEV issues to be better handled under the auspices of the EVAC.

EVAC Recommendations

The Electric Vehicle Advisory Council report issued on December 30, 2011 included a wide range of recommendations for promoting PEVs in Illinois. There were a number of those recommendations that were directed in whole, or in part to the ICC. Those recommendations are discussed below, along with the Commission's response to each recommendation.

EVAC Recommendation 3.1:

Electricity providers should offer time-variant electricity rate options that encourage EV charging and use of other electrical loads during off-peak instead of on-peak hours of the day.

- Investor-owned utilities should continue to offer existing real-time pricing (Ameren, ComEd) and time-of-use (MidAmerican) electricity rate options to residential and non-residential customers.
- Other electricity providers (i.e., ARES, municipal utilities, and cooperatives) should also develop and offer time-variant electricity rates that provide off-peak charging incentives to customers.

The Commission notes that the portion of this recommendation directed to regulated investor owned utilities is consistent with the conclusion of the ICC Workshop #4. The ICC does not have jurisdiction over the rates offered by ARES, municipal utilities or cooperatives.

EVAC Recommendation 3.3:

ICC Staff should monitor – and electricity providers, EVSE providers, auto manufacturers, the EVAC, and other stakeholders should study – early EV charging behavior in Illinois to determine whether additional time-variant electricity rate options, metering options (e.g., separate and sub-metering of EV electricity service as currently being explored in other states), load management programs (e.g., demand response), and/or other initiatives are needed to achieve

off-peak vehicle charging (and use of other electrical loads during off-peak hours) or otherwise help manage and monitor charging loads to minimize grid impacts.

ICC Staff is already engaged in monitoring these issues and plans to continue to do so. As noted elsewhere in this report, the Commission will continue the PEV Initiative as an additional forum for monitoring key PEV issues.

EVAC Recommendation 3.6:

The General Assembly, or alternatively the ICC, should ensure that renewable energy temporarily stored in batteries (e.g., EV batteries or stationary batteries in EVSE) can qualify for net-metering:

- Under 220 ILCS 5/16-107.5, the General Assembly should ensure that renewable energy stored in batteries can qualify for net-metering if the stored energy was originally generated by an “eligible renewable generating facility” (as defined in the statute) and is later discharged onto the grid.
- Alternatively, if this issue is raised in an appropriate proceeding, the ICC should ensure that electricity providers’ net-metering programs allow for net-metering of energy stored in batteries if originally generated by an “eligible renewable generating facility.”

The Commission appreciates the intent of this recommendation, but as a quasi-judicial agency it would be impermissible for the Commission to reach a conclusion on the outcome of any such issues that may be presented to it for determination in a docketed proceeding.

EVAC Recommendation 4.2:

The Governor and state agencies should publicize the benefits of EVs, as well as the state’s EV policies, incentives, and other relevant program information:

[References to other state agencies omitted]

- The ICC should provide information on ICC regulations related to EVs and EVSE, and information on the ICC’s Plug-In Electric Vehicle Initiative.

The ICC already maintains a website for the PEV Initiative and is adopting the recommendation of Workshop #2 to include PEV information on the Plug In Illinois website.

Conclusion

Since its formation in September of 2010, the ICC Initiative on Plug-In Electric Vehicles has accomplished a variety of goals. A summary of how the initial goals/objectives of the Initiative have been met is provided below.

Initial Goal/Objective	Status
Determine the impact of the initial deployment of Plug-in Electric Vehicles (PEVs) on the State's electric grid	Utility Assessments and subsequent Workshop investigation indicated that the grid is prepared to handle PEVs and only localized impacts are likely.
Determine potential/future regulatory considerations necessary to accommodate PEVs	The legal status of public charging stations is a key unresolved issue and will require legislation to clarify.
Establish consistent Statewide policies for managing PEV infrastructure and use	Workshops affirmed that existing supply rate options are appropriate, and that changes to distribution rates to accommodate new metering options are not yet necessary.
Generate accelerated interest by auto manufacturers for introduction of PEVs into Illinois markets	Now undertaken under the auspices of the Electric Vehicle Advisory Council.
Craft consumer education and outreach information components	Now undertaken under the auspices of the Electric Vehicle Advisory Council.

The creation of the Electric Vehicle Advisory Council has had an impact on the goals and scope of the Initiative, and has helped the Initiative focus its efforts. Initially the Initiative was broad in scope because of the concern over there being a void in policy formation in Illinois, and it took on issues under ICC jurisdiction as well as some outside of its jurisdiction. The EVAC now has a broad mandate to look at PEV issues in Illinois which has allowed the Initiative to focus on issues more clearly relevant to the regulatory role of the ICC. The joint efforts of the ICC and Electric Vehicle Advisory Council will allow the State, consumers, and utilities to be well prepared for this new mode of transportation. The information exchange that occurred in the ICC Workshop process and the Electric Vehicle Advisory Council will encourage the adoption of electric vehicles and allow all parties involved to benefit from the economic and environmental benefits that they can provide. The PEV Initiative has also largely reaffirmed that many existing policies in Illinois are well suited for the introduction of PEVs, and that the regulatory issues that need to be addressed are either narrowly focused, or longer term in nature.

The Commission appreciates all the hard work that stakeholders have put into participating in the various phases of the Initiative. Their efforts have provided the Commission with valuable information and a clear path by which to proceed. The Commission will continue to actively participate and coordinate with the Electric Vehicle Advisory Council, and the Initiative will periodically reconvene to explore emerging and developing PEV policy issues germane to the Commission's regulatory authority.

**Illinois Commerce Commission
Initiative on Plug-In Electric Vehicles**

**Workshop 1
Integrated Distribution Company Rules
Report
February 17, 2012**

I. Introduction and Background

The Integrated Distribution Company (IDC) Rules Working Group members -- representing consumer, municipal, Retail Electric Supplier (RES), utility, and Illinois Commerce Commission (Commission or ICC) Staff interests¹ -- welcome the opportunity to respond to the Commission's October 5, 2011 invitation to stakeholders to address five topic areas through informal workshops to aid the Commission in its Final Report on Plug-In Electric Vehicles (PEV) to the Electric Vehicle Advisory Council (EVAC). Specifically, the IDC Rules Working Group was established and was charged to address the following topic area and issue:

(1) Defining the scope of what waivers (if any) to the IDC rules would enhance the utilities' role in facilitating the adoption of PEVs and related services

"The Commission is concerned that aspects of the rules governing ComEd and Ameren as Integrated Distribution Companies (see Title 83, Sections 452.230 and 452.240 of the Illinois Administrative Code) may limit their ability to play a role in facilitating the adoption of PEVs. It therefore may be necessary to consider if a waiver to the IDC rules would allow for appropriate participation by utilities while not hampering the ongoing development of a competitive market for PEV-related programs and services. If workshop participants are interested in pursuing this topic, they may work together to define the scope and parameters of a waiver request that could subsequently be filed by Ameren and/or ComEd." (ICC Letter to PEV Stakeholders, October 5, 2011)

II. Scope of the Report

A. IDC Rules Working Group Approach

The IDC Rules Working Group met by conference call on February 14, 2012 to discuss its findings and consensus opinions for its Report to the Commission. The IDC Rules Working Group looked to the findings and consensus opinions from the very thorough and informative PEV Report of the Rates Working Group, issued to the Commission on December 29, 2011, and

¹ The IDC Rules Working Group includes the following organizations: Citizens Utility Board; Village of Oak Park; NRG Energy; Illinois Competitive Energy Association; Ameren Illinois Company; Commonwealth Edison Company; Northern Indiana Public Service Company; and ICC Staff.

subsequently on January 27, 2012, and the PEV Report of the Consumer Education and Outreach Working Group, issued to the Commission on December 30, 2011, for guidance as to whether or not a waiver to the current IDC rules for Ameren Illinois Company (Ameren Illinois) and Commonwealth Edison Company (ComEd) was necessary, and if so, to what extent the scope of the waiver should be defined in order to enhance the utilities' role in facilitating the adoption of PEVs and related services. The IDC rules govern the limitation that Ameren Illinois and ComEd have on marketing rates, programs, and services so as not to impede the development of competitive retail electricity markets.² The IDC Rules Working Group takes note that, with regard to past precedent, the Commission has exercised much caution and care in granting an IDC rule waiver in order to preserve its legislative mandate to promote the development of an effectively competitive electricity market that operates efficiently and is equitable to all consumers.

The Working Group discussed the residential retail-time pricing (RTP) program offered by Ameren Illinois and by ComEd. Moreover, it specifically addressed three issues that the Working Group should consider in the event the utilities might need to pursue an IDC waiver in order to implement policies for PEV adoption. Those three issues were as follows:

- (1) Policies utilities could implement to facilitate adoption of PEVs (for example, promoting RTP and providing electric vehicle information to customers);
- (2) Whether the IDC rules prevent utilities from implementing any of these policies;
- (3) Should the utilities consider submitting a waiver petition to the Commission in order to implement the identified policies.

B. Rates Working Group Charge

(4) Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging

"Current statutory and/or regulatory barriers may impede broad availability of dynamic pricing options that could prevent negative system impacts from at home charging PEVs at peak load times. The Commission would be interested in proposals for statutory solutions. If such solutions are needed, stakeholders may wish to provide an analysis and assessment of the potential for dynamic, real-time or time-of-use pricing to prevent or disincent home-charged PEVs from contributing to peak-load congestion and ancillary service power needs, otherwise negatively affecting energy efficiency and/or

² See Ill. Adm. Code, 83: Section 452.230 and 452.240.

other programs, and generally increasing the need for existing generation, transmission or distribution system infrastructure upgrades." (Ibid.)

C. Consumer Education and Outreach Working Group Charge

(2) Developing customer education & outreach plans

"The introduction of PEVs present a wide range of customer education and access to information challenges. To best overcome these challenges, and for customers to maximize the economic and environmental benefits of electric vehicles, the Commission sees a need for customer education and outreach plans." (Ibid.)

D. RTP Program Background and Description

On January 24, 2006, the Commission approved Ameren Illinois and ComEd's proposals to permit residential retail customers to take market-based, hourly energy pricing service under Rider RTP beginning January 2, 2007.³ Those tariff provisions satisfied the requirements of Section 16-107(b) of the Public Utilities Act (PUA) that existed as of January 2006. On June 30, 2006, Public Act 094-0977 became effective and added Sections 16-107(b-5) through (b-25) to the PUA. Ameren Illinois and ComEd subsequently filed new RTP tariffs with the Commission complying with the requirements of Public Act 094-0977, which the Commission approved in December 20, 2006.⁴

The new law required electric utilities with more than 100,000 retail electric customers (i.e., Ameren Illinois and ComEd) to file a tariff or tariffs that allow residential customers to elect RTP. Furthermore, the new law required that such tariffs describe the methodology for determining the market price of energy to be reflected in the real-time rate; the manner in which the customer who elects real-time pricing will be provided with ready access to hourly market prices including, but not limited to, day-ahead hourly energy prices; the selection and compensation of a third party to implement RTP; and utility cost recovery associated with the RTP program. In addition, the Commission is required to monitor the performance of the RTP program and is directed to modify or terminate the program if the Commission finds that the RTP program has not resulted in net benefits to residential customers.

At present, Ameren Illinois implements and promotes its RTP program, Power Smart Pricing (PSP), through a Commission approved third party administrator, CNT Energy. CNT Energy, as Ameren Illinois' program administrator, operates the PSP program, provides customer outreach, enrollment and education, and administers an information system and technical and

³ Ameren Illinois, ICC Docket Nos. 05-0160/05-0161/05-0162 (cons.); ComEd, ICC Docket Nos. 05-0159 and 05-0597.

⁴ Ameren Illinois, ICC Docket Nos. 06-0691/06-0692/06-0693 (cons.); ComEd, ICC Docket No. 06-0617.

other customer assistance. To date, Ameren Illinois has not requested a waiver to the IDC Rules because its program administrator is an independent contractor and, as such, the independent program administrator's activities are not subject to the IDC Rules.

At present, ComEd implements and promotes its Residential Real-Time Pricing (RRTP) program primarily through two program administrators, Comverge and CNT Energy. On October 8, 2008, the Commission approved ComEd's request for a waiver to the IDC Rules, that allowed ComEd to promote, advertise, and market its RRTP Program.⁵ ComEd's rationale for an IDC Rules waiver for its RRTP program included eliminating confusion over the program's brand name and its origin, which includes use of ComEd's logos; leveraging existing ComEd communication channels and promotions; and taking advantage of cross selling opportunities, like marketing RRTP and its Load Guard Automated Price Response Service with ComEd's Central Air Conditioning Cycling.⁶

An RTP program is an hourly pricing program for residential customers, which allows the customer to pay the hourly, wholesale market price for electricity. The main difference between the utility RTP program and its standard fixed-price rate is how the residential customer's cost of electricity supply is calculated. Regardless of the residential customer's electric supply choice -- whether through RTP or through the utility's standard residential rate -- all customers are required to pay Delivery Service charges. These charges are for the utility to maintain the poles, wires, and services required to deliver the electricity to the residential customer and are shown separately on the customer's electric bill.

With the standard residential rate, the customer pays a set price for electricity supply. This price varies by season, and is adjusted periodically, but it does not change from hour to hour or from day to day. The residential customer pays the same price for electricity no matter what time of day or day of the week that the customer uses it.

With the RTP program, the price of the electricity varies from hour to hour based on wholesale market prices. The price that the residential customer pays for electricity depends on the time of day when the customer uses it. The customer's bill will show the total cost for the electricity used, calculated using the hourly market prices and the residential customer's corresponding hourly usage. The RTP program uses day-ahead prices, meaning that the hourly prices for each day are set the evening in advance. Each evening, the price information for the following day is available online and by phone. Under an RTP program, the customer simply pays the actual market price, without mark-up by the utility offering the program.

⁵ ICC Docket No. 08-0411.

⁶ ComEd RRTP Marketing Plan Presentation to ICC Staff and Stakeholders, June 2010.

III. Consensus Opinions

A. IDC Rules Working Group Consensus Opinion

During its February 14 meeting, the IDC Rules Working Group concluded that there were no additional ideas, policies, or strategies presented by interested parties that would require an IDC Rules waiver for Ameren Illinois or an expansion of the current IDC Rules waiver for ComEd to facilitate adoption of PEVs and related services.

At this time, the IDC Rules Working Group consensus opinion is that there is no demonstrated need or compelling evidence for the Commission to consider an IDC Rules waiver for Ameren Illinois to market its residential real-time pricing program, Power Smart Pricing, or for any expansion to the waiver that ComEd currently has to market its Residential Real-Time Pricing program in order to allow these utilities to participate appropriately in PEV-related programs and services as outlined in the Commission's October 5, 2011 stakeholder invitation on this specific topic area. That said, the Working Group does not rule out the possibility that an IDC Rules waiver may be needed for Ameren Illinois or that an expansion of ComEd's current IDC Rules waiver may be needed in the future should a policy consideration or requirement be executed by the Commission, the EVAC, or the Legislature, which the utilities choose or are mandated to implement.

The IDC Rules Working Group bases its consensus opinion upon the findings and consensus opinions from the Rates Working Group Report and the Consumer Education and Outreach Working Group Report. Neither Report points out specific issues or conditions that are or would be detrimental to the utilities' role in facilitating the adoption of PEV's and related services. In short, three findings from these Reports support the IDC Rules Working Group's consensus opinion. One finding is the availability of the residential RTP programs -- PSP and RRTP -- and other rate options from Ameren Illinois and ComEd, as well as the opportunity for RESs to offer competitive PEV product options. A second finding is the lack of existing barriers to tariffed services offered by Ameren Illinois and ComEd. A third finding is that there is an array of consumer education programs from the utilities, EVAC, and other stakeholders. These three findings, which provide the foundation for our consensus opinion, obviate the need for an IDC Rules waiver for Ameren Illinois or an expansion of the current IDC Rules waiver for ComEd by the Commission. At present, the utilities and other market participants appear well-positioned to facilitate the adoption of PEVs and related services in an appropriate manner.

B. Rates Working Group

The PEV Rates Working Group Report's findings indicate that there are no known barriers to the tariffed supply services currently offered by the utilities. According to the Report's consensus opinions on residential rates -- supply pricing and services -- the Rates Working Group's finding "that the existing residential Real-Time Pricing (RTP) Program available from Ameren Illinois and ComEd today, and/or the potential for future time variant price offerings from RESs, demonstrates that sufficient supply offerings are available or will be in the future."⁷ Moreover, the Report's consensus opinion on residential rates -- demand response services -- indicates that "there were no known regulatory or legal barriers to utility or market service offerings. Illinois utilities subject to the Commission's Integrated Distribution Company Rules (83 Ill. Adm. Code 452, Subpart B) are not prohibited from offering tariffed demand response programs, and there are no known impediments to RESs or CPSs making such offerings."⁸ Similarly, the Report's consensus opinion regarding non-residential rates -- supply services and demand response program -- states that "there are no known regulatory or legal barriers to utility or market service offerings."⁹

C. Consumer Education and Outreach Working Group

The Consumer Education and Outreach Working Group Report's findings do not indicate that Ameren Illinois or ComEd's ability to provide certain consumer information about PEVs, at-home charging information, off-peak and available rates information, public and work place charging issues, and integrating renewable energy is limited or impaired to an extent that would be detrimental to the adoption of PEV's and related services. In fact, the Report's Appendix A¹⁰ points out that Ameren Illinois and ComEd have recently launched websites to provide EV-related resources for their customers. Each utility's web-based information source provides a general overview, advantages and benefits, cost comparisons, and other useful information for Illinois consumers. Moreover, the Report states that, in addition to the utilities, there are various "messengers," "actors," and sources from which PEV information is available and that the EVAC is an appropriate forum, given its composition and duties,¹¹ for utility and stakeholder collaboration regarding consumer education and outreach.

Additionally, the Report states that "Illinois utilities and stakeholders should collaborate with automobile companies to educate vehicle sellers on RTP and time-of-use (TOU) rate options for new PEV owners and ensure that effective communication materials are available

⁷ Rates Working Group Report, January 27, 2012, page 3.

⁸ Ibid., page 4.

⁹ Ibid., page 5.

¹⁰ See Report of the Consumer Education and Outreach Working Group, December 30, 2011.

¹¹ See Public Act 097-0089.

through fact sheet, websites, etcetera from a wide-variety of resources."¹² In short, the Report appears to suggest that both utilities are well-positioned to provide important consumer education and outreach through their real-time pricing offerings and rate options coupled with their web-based PEV and other consumer education resources. Utility collaboration with EVAC would enhance the overall effectiveness of consumer education and outreach programs regarding adoption of PEVs and related services. Finally, a variety of other market participants including, but not limited to, the RES community, municipalities, dealerships that sell electric vehicles, and electric vehicle charging station providers may also play an integral role in ensuring valuable consumer education and outreach.

D. Summary

In sum, based on the findings and consensus opinions of both pertinent working groups, the IDC Rules Working Group believes that there is no substantive reason to consider an IDC Rules waiver for Ameren Illinois or any additional waiver or modification of the current IDC Rules for ComEd to enhance the utilities' role in facilitating adoption of PEVs and related services.

¹² Report of the Consumer Education and Outreach Working Group, December 30, 2011, page 5.

STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION
PLUG-IN ELECTRIC VEHICLE INITIATIVE

Workshop 2
Consumer Education and Outreach
December 31, 2011

Working Group Participants:

Ameren Illinois
Citizens Utility Board
City of Chicago
CNT Energy
ComEd
Electrification Coalition
Environmental Law and Policy Center
Ford Motor Company
General Motors
Illinois Commerce Commission Staff
Illinois Department of Commerce and Economic Opportunity
Metropolitan Mayors Caucus
MidAmerican Energy Company
Northern Indiana Public Service Company
Village of Oak Park

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I. Introduction

A. Procedural Background

The Illinois Commerce Commission (“Commission”) introduced its Plug-In Electric Vehicle Initiative, currently co-chaired by ICC Chairman Doug Scott and Commissioner Erin M. O’Connell-Diaz, with an invitation to utilities to submit an Initial Assessment of the impact of Plug-In Electric Vehicles (“PEVs”) on the electric system. As a result, Ameren Illinois (“Ameren”), Commonwealth Edison (“ComEd”), and MidAmerican Energy Company (“MEC”) submitted assessments of the expected effect of PEVs on operations, regulatory concerns, rate options needed (if any) to encourage PEV owners to charge at off peak times and the provision of “adequate information to obtain necessary utility service and third-party equipment for inhome/business charging.”

Stakeholders were invited to comment on the utility assessments in writing and at a Commission Policy Committee meeting on March 9, 2011, and stakeholders and utilities presented supplemental comments to the Commissioners’ follow-up questions in writing and at a second Policy Committee meeting on August 23, 2011. The Initiative then began an informal workshop process, and formed the Consumer Education and Outreach working group, on October 13, 2011. The Commission’s October 5, 2011 workshop invitation asked the Consumer Education and Outreach working group to complete this report by December 31st 2011, with the following guidance:

(2) Developing customer education & outreach plans

The introduction of PEVs presents a wide range of customer education and access to information challenges. To best overcome these challenges, and for customers to maximize the economic and environmental benefits of electric vehicles, the Commission sees a need for customer education and outreach plans.

While interactions between a potential PEV buyer and the automobile dealer/manufacturer are outside of the Commission’s purview, interactions between a PEV purchaser and the local electric utility related to the installation of at home charging equipment and to the consideration of rate options are of great interest to the Commission. Thus, such plans could consider what role utilities, NGOs, environmental organizations, consumer advocacy organizations, and others with the ability to engage in consumer education can and should play in the customer education process. Such plans could also confront what role PEV dealers and manufacturers play in the customer education process. Activity related to education and outreach is underway in other states, and this workshop topic would be well informed by parties giving consideration to the best practices from other jurisdictions.

Working Group Approach

The working group members agree that customers will evaluate a large number of factors when considering whether to purchase and maintain a PEV. We also agree that customers are likely to consult a wide variety of sources for this information. Consequently, we do not recommend that the Commission take a prescriptive approach to consumer education. Instead, Part II of this report discusses the types of information that customers should receive, and the messengers most likely to convey that information. Because of the quantity of information available to customers through utilities, dealers, manufacturers and other organizations, the working group agrees that the Commission need not play a central role in providing PEV information directly to customers. However, Part III offers suggestions to the Commission on actions it can take to assure the quality and adequacy of the information that customers receive from diverse sources.

The Commission requested that the working group reach consensus, to the extent possible, within the report and indicate the various schools of thought where consensus was not possible. The Commission may presume consensus among working group participants on the items discussed below.

II. Information Needed by PEV Customers and Expected Messengers

A. Basic information about PEVs

Customers who are interested in buying a PEV require all of the basic information on car model features and specifications that they would seek for a non-PEV car purchase. Table 1 identifies some additional factors specific to PEVs that consumers will also want to consider and the likely sources of this information.

Table 1 – Basic Information about PEVs	Utilities and/or ARES	Auto Mfctrs and/or Dealers	State Government	Local Governments	Enviro / Public Interest Grps	First Responders	Educational Institutions	Charging Station Businesses
Car model features and specifications		x						
Local, state, and federal financial incentives	x	x	x	x	x			x
Availability of electric vehicles in the local area		x						
Availability of public charging stations in the local area				x	x			x
The different types of electric vehicles (full electric, and gas-electric hybrid, for example) and electric range expectations		x			x		x	
The cost to purchase and maintain an electric vehicle, in absolute terms and relative to a gasoline vehicle	x	x			x		x	
Financial advantages of electric vehicle charging	x	x			x		x	
Environmental advantages of electric vehicles	x	x		x	x		x	
Job creation, economic development and energy security implications		x			x		x	
Safety issues that may differ from a conventional automobile		x				x		

B. Vehicle Charging

Early assessments indicate that PEV owners will most often charge vehicles at home. The workplace will be the second most common charging location, followed by publicly-accessible charging stations on public streets, at retail outlets, public garages, commuter parking lots, etc. Again, consumers will look to a variety of different messengers to equip themselves with the information they need to arrange for installation and access to charging infrastructure.

As a starting point, consumer education materials should be consistent in their use and explanation of standard industry terms related to PEV charging:

Vehicle Charging Terminology	
•	Level 1 charging: 120 volts (a standard household wall outlet), typically takes 8-20 hours to fully recharge a vehicle battery.
•	Level 2 charging: 240 volts, typically takes 4-8 hours to fully recharge a battery, may require wiring upgrades, total residential installation costs estimated \$1500-\$2000, though public/commercial installations can be substantially more costly due to changes/upgrades to existing infrastructure.
•	DC off-board fast charging: 480 volts, batteries charge to 80% in 30 minutes, estimated cost \$45,000, though installation plus hardware costs can exceed \$80,000.

1. Residential Charging

Because most PEV charging will take place at home, it is important that PEV owners and prospective owners understand their options associated with residential PEV charging equipment, including features, costs, permitting and other requirements. Again, we expect that this information will be available from a variety of different messengers and sources.

Table 2 – Information about At-Home Charging		Utilities and/or ARES	Auto Mftrs and/or Dealers	State Government	Local Governments	Enviro / Public Interest Grps	First Responders	Educational Institutions	Charging Station Businesses
Residential charging equipment options per vehicle model			x						x
Level 1 versus Level 2 features, e.g. charging time, estimated annual electricity consumption, costs			x			x		x	x
“Smart” communications capabilities of charging stations		x	x						x
Installation options and contacts			x						x
Whether home upgrades are needed		x	x		x				x
Installation and maintenance costs			x						x
Permit and inspection requirements		x			x				x
Available PEV and/or charging station incentives		x	x	x	x	x			x
Whom to call for trouble-shooting and questions		x			x		x		x

a. Rate Options and Real-Time Pricing

Real-time and time-of-use rate-structures with low off-peak rates provide price signals that encourage customers to shift electricity consumption from periods of high demand to periods of low demand. Incentivizing PEV owners to charge vehicles during off-peak hours will reduce the chance that vehicle charging will have negative impacts on the electric grid.

In Illinois, ComEd and Ameren offer a real-time price (“RTP”) rate structure to residential customers. MEC offers a time-of-use (“TOU”) rate with fixed on-peak/off-peak prices. Although at this point, there are no time-variant rates available to residential customers in Illinois through alternative retail electric suppliers (“ARES”), some ARES have publicly stated that they hope to create electric rates that attract PEV owners (aggregated nighttime wind power rates, for example). In the course of this working group process, the Rate Options subcommittee will submit a report to the ICC that contains more information about the availability and advantages of these rates.

Ideally, customers would learn about these rate options before purchasing a PEV, but at a minimum, customers should be provided with neutral information about RTP/TOU rate options at the point of purchase. It is important to ensure that early adopters of PEVs have a positive learning experience regarding the available rate options. Illinois utilities and stakeholders should collaborate with automobile companies to educate vehicle sellers on RTP/TOU rate options for new PEV owners and ensure that effective communication materials are available through fact sheets, websites, etc. from a wide-variety of resources. The Electric Vehicle Advisory Council, discussed further in section III.A., below, is an appropriate forum for this collaboration.

Which Groups Have an Interest in Promoting Off-Peak Charging

A variety of stakeholders have an incentive to ensure that, by and large, PEV charging takes place during off-peak hours. Real-time or time-of-use rate options can help encourage PEV owners to charge off-peak.

- Utilities, the Commission and consumer advocates have an interest in protecting the reliability of the electric grid and minimizing the need for upgrades and repairs.
- Auto manufacturers and dealers have an interest in promoting rates that will reduce the costs of PEV ownership for prospective buyers.
- Consumer advocates have an interest in the financial benefits that accrue to consumers who use real-time or time-of-use rates for off-peak charging.
- Environmental groups have an interest in promoting charging at times when there is a higher proportion of lower-carbon or carbon-neutral generating resources in operation (in northern Illinois, for example, wind and nuclear energy supply a large component of nighttime energy supply).

Table 3 – Information about Off-Peak Charging and Available Rates	Utilities and/or ARES	Auto Mfctrs and/or Dealers	State Government	Local Governments	Enviro / Public Interest Grps	First Responders	Educational Institutions	Charging Station Businesses
Utility Real-Time Pricing (RTP) or TOU programs	x	x	x		x		x	x
ARES RTP/TOU options	x	x	x		x		x	x
Financial benefits of off-peak charging	x	x		x	x		x	x
Social (distribution grid) benefits of off-peak charging	x			x	x		x	
Environmental benefits of off-peak charging	x			x	x		x	

b. Utility Notification

At some point in the future, PEV charging could represent a significant new source of load for the electric distribution grid, depending on how, when and where vehicles are charged. Level 1 charging does not pose a concern – the power draw from an electric vehicle charging at 110 volts is equivalent to that of a hair dryer. Level 2 charging, on the other hand, has an equivalent demand to that of an electric clothes dryer or central air conditioner. Like these other high-power appliances, Level 2 charging could potentially create problems if several electric vehicles are “clustered” together on the same neighborhood transformer and are all charged at once during a period of high demand. Utilities would prefer to know where Level 2 charging stations are installed so that they can anticipate and minimize potential problems.

While the working group agrees that outreach and education materials from a variety of messengers should encourage customers to notify their utility when they install Level 2 charging, we do not feel that a mandatory notification needs to be introduced at this time. Not only would it be difficult to impose and enforce such a requirement, it is not clear what the benefits would be over and above a voluntary approach. Customers have responded well (90% or higher) to requests to voluntarily share their home addresses to allow their local electricity provider to gain insight into their residential charging patterns in early PEV roll-out markets,¹ and it remains to be seen whether customer charging patterns and RTP/TOU rates will sufficiently reduce the probability of negative impacts, even where “clustering” does occur.

¹ From General Motor’s 2011 customer data tracking.

Table 4 – Voluntary Utility Notification Procedures	Utilities and/or ARES	Auto Mftrs and/or Dealers	State Government	Local Governments	Enviro / Public Interest Grps	First Responders	Educational Institutions	Charging Station Businesses
Reasons for notifying utilities when Level 2 charging stations are installed	x	x	x	x	x			x
Process for notifying utilities	x	x	x	x	x			x

2. Public and Workplace Charging

The same messengers that provide information for customers seeking to install charging stations in their home garages should also develop resources for local governments and businesses who wish to install charging stations for use by fleet vehicles, employees, and/or the public at large. In addition to assessing the technology and functionality offered by different charging station models, businesses and governments should compare the business propositions offered by third-party charging station operators. Business models in this area are still evolving, and charging station owners and host sites have many choices to make when negotiating business deals with charging station companies.

The installation process on commercial properties and public locations can be more complicated than in a residential situation, and may require additional interaction with the local government and/or the utility. The additional load associated with a DC off-board fast charge station is large enough to trigger the utilities' existing evaluation processes for customer load additions, which are described in detail on pages 11-14 of the Reliability Working Group's report, "Modeling and assessment of potential localized reliability impacts." For example the Village of Oak Park will be the location for three DC off-board fast charge stations, and ComEd has determined that a 7-foot electrical cabinet must accompany each charging station because the local grid cannot support this additional load.

Users of public charging stations will have their own set of information needs. The private sector, particularly charging station owners and operators, has a strong interest in helping PEV drivers find publicly accessible stations, facilitating easy access, and ensuring positive customer experiences. Local governments and environmental and public interest groups are expected to play a role as well. Auto manufacturers are expected to play a smaller role in facilitating commercial and public charging stations (versus residential stations) because they must be equipped with neutral technology platforms for use by all car models.

Table 5 – Public and Workplace Charging	Utilities and/or ARES	Auto Mfctrs and/or Dealers	State Government	Local Governments	Enviro / Public Interest Grps	First Responders	Educational Institutions	Charging Station Businesses
For businesses and local governments installing workplace and public charging stations								
Charging station options and functionality, e.g., “smart” communications capability, accounting and transactional features	x	x						x
Installation options and contacts								x
Business models								x
Whether electrical wiring or other upgrades are needed	x							x
Installation and maintenance costs								x
Permit, zoning and inspection requirements	x			x				x
Utility notification procedures	x		x	x	x			x
Available incentives	x	x	x	x	x			x
Who to call for trouble-shooting and questions								x
Emergencies and safety hazards	x	x		x		x	x	x
For public charging users								
Station locations and accessibility				x	x			x
Prices and membership structures				x	x			x

3. Renewable Energy

The environmental benefits of PEVs are multiplied when clean, renewable sources of energy are used to generate the electricity used for charging vehicle batteries. Consumer surveys indicate that the source of electricity matters to early PEV adopters, and some auto manufacturers are already offering PEV buyers package deals that bundle home charging equipment with grid-connected solar photovoltaic (“PV”) systems.² Independent charging station businesses are developing solar canopies for use by public charging stations. For example, I-Go Car Sharing in Chicago is installing 18 solar canopies to power the 36 new PEVs that the company will add to its fleet in 2012.³

² Ford “Drive Green for Life” Program, http://media.ford.com/article_display.cfm?article_id=35036

³ I-Go Solar Powered Electric Vehicle Project, <http://www.igocars.org/2011/11/30/solar-canopies/>

Consumers will seek out information about opportunities to integrate renewable energy into PEV charging infrastructure. The policy structure for renewable energy in Illinois, including net metering and the renewable energy portfolio standard (“RPS”), especially the solar and distributed generation carve outs, will make it easier and more affordable for consumers to install renewable energy for PEV charging.⁴ Clear, consumer-focused information about implementation programs should be made available to consumers to encourage participation.

ARES electricity supply offers may evolve to offer new ‘green’ energy products to PEV owners through renewable energy credits or other methods. The ARES could enhance customers’ knowledge and awareness by educating customers on the environmental benefits of both renewable energy and PEVs. ARES might also choose to provide more comprehensive information on PEVs to customers as a way of inducing them to buy PEVs and subscribe to the ARES’ rate.

Net Metering and PEVs

Initial research into consumer charging behavior indicates that most PEV owners will charge their vehicles at home overnight. However, net metering programs may enable PEV owners to effectively power their vehicles using solar PV. Under net metering, net excess electricity generated during the daytime may be “stored” on the grid for use at a later time, such as nighttime PEV charging.

Table 6 – Integrating Renewable Energy	Utilities and/or ARES	Auto Mfctrs and/or Dealers	State Government	Local Governments	Enviro / Public Interest Grps	First Responders	Educational Institutions	Charging Station Businesses
Charging station/renewable energy integration opportunities	x	x			x			x
Policy and programs to increase affordability	x		x	x	x			x
Tailored renewable electricity supply products for PEV owners	x			x	x			

⁴ 220 ILCS 5/16-107.5 (Net Metering) and 20 ILCS 3855/1-75(c) (Renewable Portfolio Standard).

4. Illinois “Readiness Initiatives” and Pilot Projects

There are a number of initiatives underway in the state of Illinois aimed at helping cities, towns and consumers prepare for the arrival of PEVs. Educating consumers about infrastructure investments and efforts by utilities and governments will ease consumers’ concerns about this new technology. Each messenger highlighted in the previous sections will play a role in educating consumers about new initiatives, pilot projects and investments being made in Illinois’ electric transportation infrastructure. Some examples of these initiatives and pilots are provided in Appendix B.

III. The Commission’s Role

Different customers will encounter, and trust, different sources of information on PEVs and electric rates. The diversity of messengers described above will help create a well-informed populous. Because so many actors will be providing information to potential PEV customers, the working group agrees that it will be unnecessary for the Commission to take an active role in consumer education. Instead, the Commission is encouraged to continue its existing pattern of inquiry into PEV integration, ensuring that PEV information provided by entities under its jurisdiction provide accurate and useful information to customers, particularly on the topics of time-of-use rates and off-peak charging. To that end, the working group identifies two actions that the Commission should consider to help coordinate and increase the quality of information provided to customers by multiple sources outside of the Commission’s jurisdiction.

A. The Commission Should Continue its Active Participation in the EVAC

The Electric Vehicle Advisory Council, created by P.A. 97-0089, is an ongoing group that “shall investigate and recommend strategies that the Governor and the General Assembly may implement to promote the use of electric vehicles, including, but not limited to, potential infrastructure improvements, State and local regulatory streamlining, and changes to electric utility rates and tariffs.” The EVAC consists of appointed members outlined in P.A. 97-0089, including the Executive Director (or his designee) of the Illinois Commerce Commission. While not required by statute, the group’s discussions have thus far been open to participation by stakeholders outside of the appointed members.

The EVAC cannot substitute for the Commission’s expertise on the electric grid, or for the Commission’s authority to request information from utilities. Nonetheless, the working group believes that the EVAC will serve as a useful forum for collaboration between all stakeholders, and will serve as a vehicle to:

- Ensure that customer education and information materials and messages are coordinated among stakeholders;
- Share information on the latest developments in the PEV marketplace and their impact on consumer education;
- Share information on the latest developments in electric rates suitable for PEV owners;

- Share information on any consumer concerns or technical problems that arise from PEVs or their charging infrastructure;
- Evaluate consumer education messages for clarity and effectiveness;
- Troubleshoot consumer education messages that do not seem to be working; and
- Share examples of PEV educational materials that have proven effective.

This working group is pleased that the Commission's Executive Director is an appointed member of the group and recommends that the Commission continue to actively participate in the EVAC. The Commission may also consider requesting information from the utilities that may assist the EVAC in its work, to the extent that this information cannot be obtained directly by the EVAC. Such information may include:

- The number of Level 2 charging stations installed for residential use in each utility's service territory, as reported through the utility's voluntary notification procedures.
- The number of PEV owners utilizing various types of electric rates, if available.
- Additional information that will help the EVAC evaluate the effectiveness of consumer education materials as they relate to utility notification procedures and PEV charging behavior.

B. The Commission Should Consider Referencing PEVs on the Plug In Illinois Website

The working group agrees that a centralized, Commission-created source for information is unnecessary, given the wide range of stakeholders who will educate consumers about PEVs. However, the Commission already hosts a website devoted to comparing electricity rates. Coincidentally, its name - "PlugInIllinois.Org" - may attract customers looking for PEV information.

The working group recommends that the site be updated to alert customers to the site's applicability to PEV owners. A simple addition to the home page may suffice, noting that the variable rates discussed on the site are useful in reducing electricity supply costs when charging PEVs at night, encouraging new PEV owners to notify their distribution utility if they are installing Level 2 or DC off-board fast charge stations, and providing links directly to utility websites where such voluntary notification can be made and additional information can be found.

Appendix A

Appendix A provides a high-level sampling of some of the web-based PEV resources that are available to Illinois consumers. It is not intended to be comprehensive, but simply to provide a short overview of what is available as of December 2011.

The Illinois electric utilities have recently launched websites to provide EV-related resources for their customers, including:

- General overviews of the various kinds of plug-in electric vehicles;
- PEV contributions to job creation, reduction in use of foreign oil, reductions in overall vehicle maintenance, purchasing incentives and environmental advantages;
- Direct comparisons between electric charging costs and gasoline costs;
- Considerations for charging at home and at work;
- Instructions for customers to notify the utility when installing Level 2 charging stations.

Ameren's PEV site:

www.ameren.com/Environment/ElectricVehicles/Pages/ElectricVehicles.aspx



Electric Vehicles

One of the keys to the success of electric vehicles (EVs) is access to abundant, safe and reliable electricity. That's where Ameren comes in! Providing power is what we do every day, and we're planning to make sure we can meet tomorrow's needs, too. That includes powering EVs. We are working to ensure that our system is ready for widespread use of these vehicles in the future. Be sure to review the Get Plug-in Ready information below if you are already considering the purchase of an electric vehicle.



Know the Basics

Gain [knowledge](#) of electric vehicles and vehicle charging.



Discover the Benefits

Discover how the use of electric vehicles [benefits](#) everyone.



Get Plug-in Ready

Learn how you can [get plug-in ready](#) at home or at work.



FAQs

Find [answers to your questions](#) about electric vehicles.



Free Service Assessment

Contact Ameren for a [free service assessment](#).



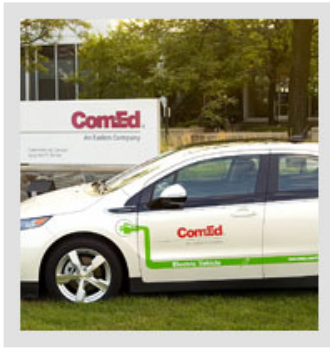
Contact Us

[Contact us](#) if you have questions about electric vehicles.

ComEd's PEV site: www.comed.com/sites/environment/Pages/electricvehicles.aspx

Hitting the Road in an EV

Overview	EV Basics	Calculator	Rate Options	Residential	Business	Resources
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Electric Vehicles (EVs) offer a high-performance driving experience and cost less to fuel than gas-powered vehicles - all while contributing to a cleaner environment. Whether you are considering an EV for yourself or for business use, or you want to install EV charging equipment at home, at work or in your town, ComEd is here as your go-to resource for everything EV related.

There is a lot to learn about EVs. For instance: What choices are out there? How do they operate? How do you charge them? And how far can you go? At ComEd, we're committed to

providing smart answers and reliable information to help you sort through the options and make informed decisions.

Make sure you [find out](#) how much you could save on your annual fuel cost with an EV.

If you plan on installing Level 2 charging for your EV, please register your vehicle [here](#) if you're residential customer or [here](#) if you're a business customer

Register your EV with ComEd

[RESIDENTIAL CUSTOMERS](#)

[BUSINESS CUSTOMERS](#)



Calculate your savings with driving Electric Vehicle.

[CALCULATE](#)

Download ComEd's Guide to EVs

[BROCHURE](#)

Get answers to common questions about EVs

[VIEW FAQs](#)

ns

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The alternative retail electric suppliers in Illinois do not currently offer special rates or resources for PEV owners, but when they do, Illinois electric customers will be able to link through to company websites from the Plug In Illinois – Power of Choice website: www.pluginillinois.org.

The automobile manufacturers have detailed websites devoted to helping consumers arrive at the decision to purchase a new PEV model and connecting them to the information and resources they need when they bring the car home, including information about charging options. For example, see:

- Ford Focus Electric: www.ford.com/electric/focuselectric/2012
- Chevy Volt: www.chevrolet.com/volt-electric-car
- Nissan Leaf: www.nissanusa.com/leaf-electric-car

The Illinois Environmental Protection Agency has information about the Alternative Fuels Rebate Program at www.illinoisgreenfleets.org/fuels. Rebates of up to \$4000 are available to Illinois residents who purchase or convert plug in vehicles.

The U.S. Department of Energy's Alternative Fuels and Advanced Vehicle Data Center has information about emissions and operating costs, city deployment projects, tax credits and incentives: www.afdc.energy.gov/afdc/vehicles/electric.

Hybrid and Plug-In Electric Vehicles

Hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), and all-electric vehicles (EVs)—also called electric drive vehicles collectively—use electricity either as their primary fuel or to improve the efficiency of conventional vehicle designs.

The Basics ▶



[What is a hybrid?](#)
[What is a plug-in hybrid?](#)
[What is an electric vehicle?](#)

Drive It ▶



[Find a vehicle](#) 🔍
[Benefits of electric drive](#)
[Maintenance and safety](#)

Charge It ▶



[Find a charging station](#) 🔍
[Charging equipment](#)
[Battery information](#)

Tax Credits and Incentives

Plug-in hybrids and all-electric vehicles qualify for a [\\$2,500 to \\$7,500 federal tax credit](#).

🔍 [Find tax credits and incentives](#) in your state.



Emissions and Operating Costs

Learn about electricity sources and emissions in your area. ▶

Compare operating costs and greenhouse gas emissions with conventional vehicles. ▶



Cities Getting Plugged In

Explore a map of deployment projects. ▶

Learn about cities preparing for plug-in vehicles. ▶

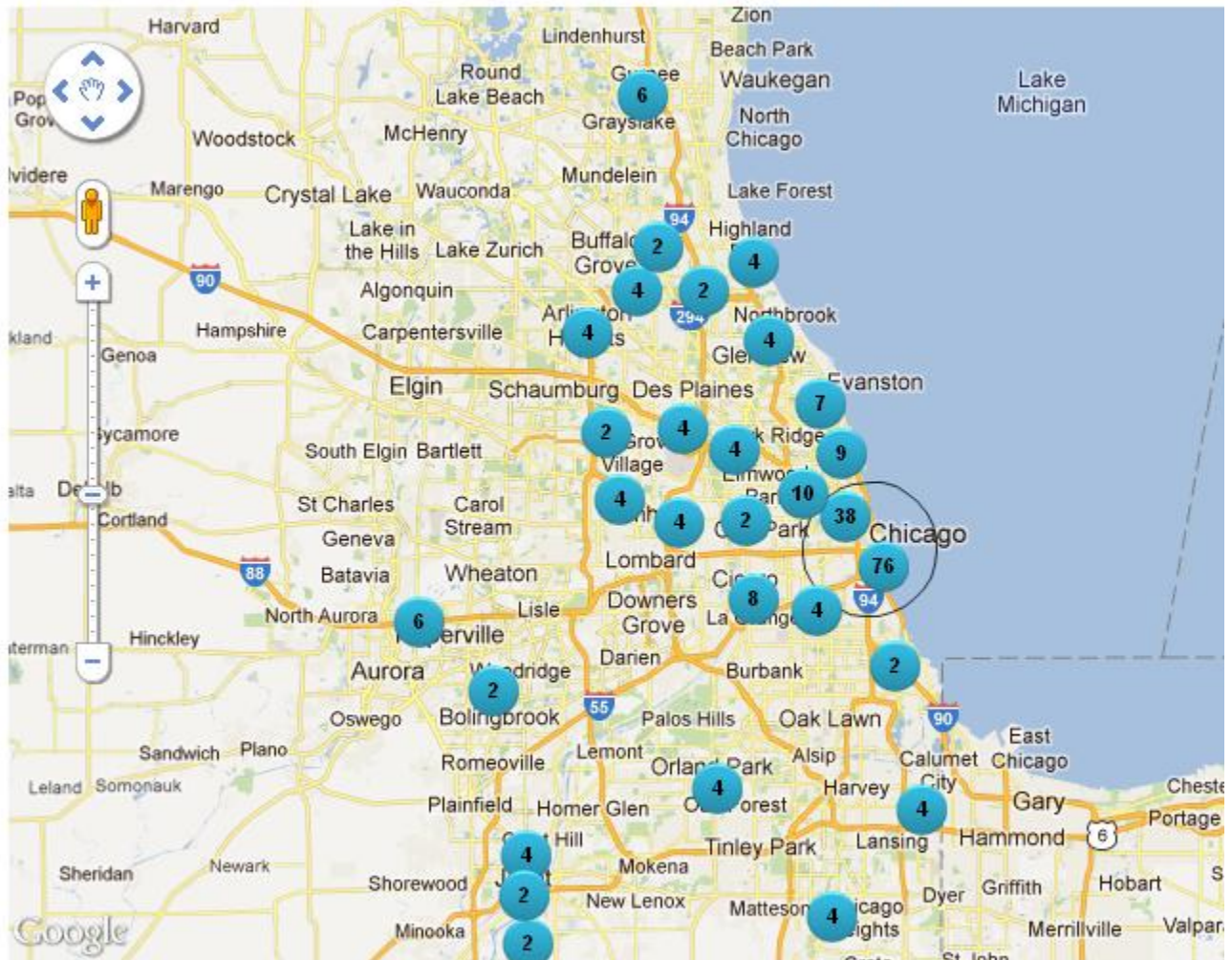
Download a template for charging station permits. ▶

On the **Charge Point America Network** website, Illinois consumers can search for public charging stations near them and find out if they are available:
<http://chargepointamerica.com/charging-find-stations.php>



Find Charging Stations

Legend: Available In Use Future/Unavailable (click to zoom in)



Find Charging Stations

Address Distance

(State required if entering City only)

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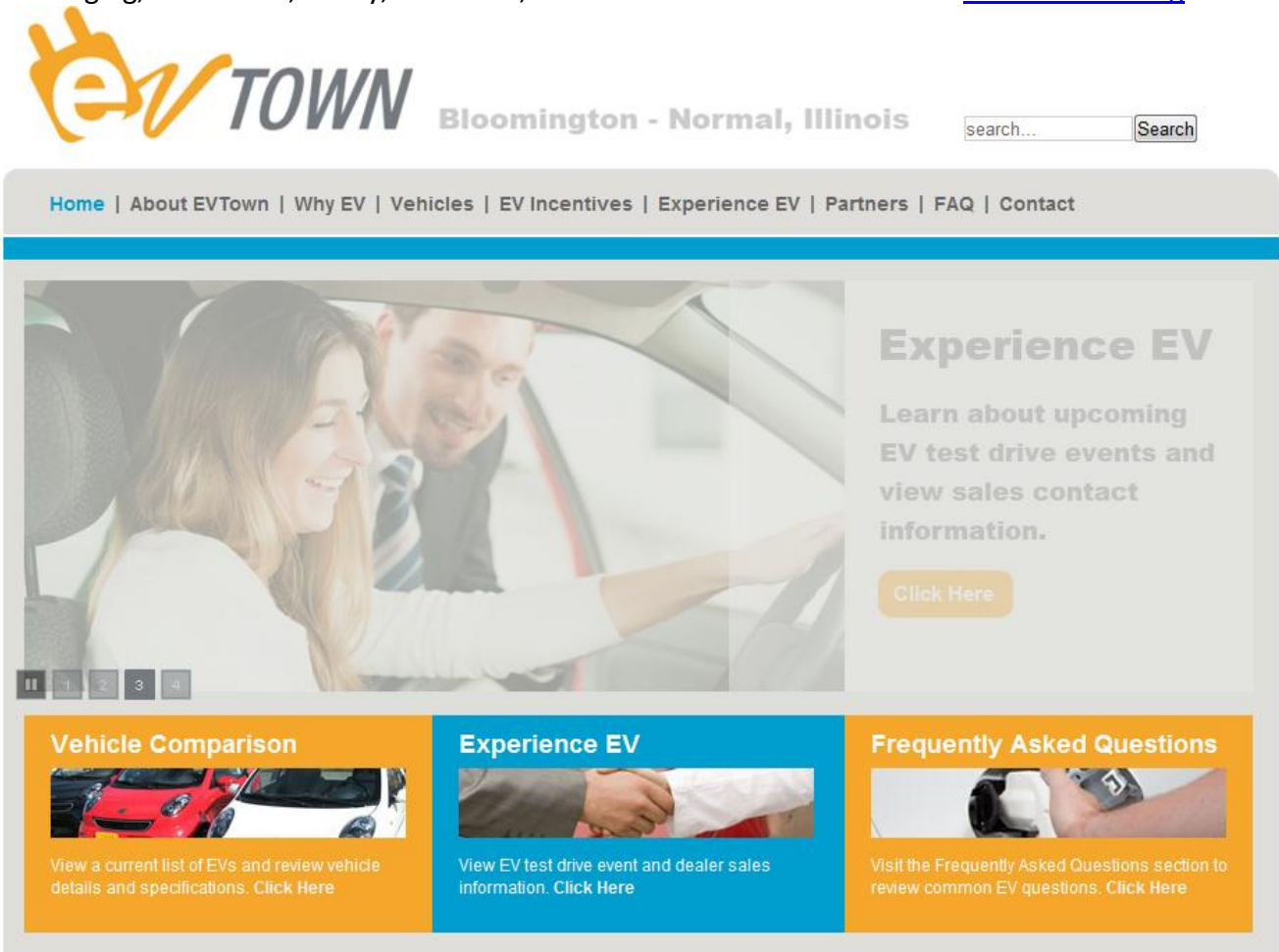
The Electric Drive Transportation Association's website www.GoElectricDrive.com has information about the cars, incentives, charging, a cost-savings calculator, a PEV newsfeed and other resources.



I-Go Car Sharing will soon have 18 solar canopies to power 36 electric vehicles. The canopies will be very visible to I-Go members and non-members alike, and consumers will be able to read more about them on I-Go's website, www.igocars.org.



EVTown is a represents a collaborative effort involving government, the business community, and other community stakeholders to establish Bloomington-Normal, Illinois as a model electric vehicle community. The EVTown website has information for consumers about EV charging, economics, safety, insurance, and environmental benefits. See www.evtown.org.



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The National Fire Protection Association has created a process for training first responders to deal with emergencies involving PEVs and their electrical infrastructure (see www.evsafetytraining.org). First responders have a role in training and outreach within their communities and in assisting and coordinating with local electrical and building inspectors around PEV charging infrastructure installations. NFPA is managing ongoing safety updates for handling of batteries and other common hazards. The project is being funded by a \$4.4 million grant from the U.S. Department of Energy.

The PlugInChicagoMetro.org website (a project of the Environmental Law & Policy Center) will provide Chicago-area consumers with information about locally-available PEVs, charging options, real time electricity rates, incentives, environmental and economic benefits. Launch date: January 2012.



[ABOUT THE CARS](#) ▾ [CHARGING](#) [INCENTIVES](#) [WHY PLUG IN?](#) [ACROSS THE MIDWEST](#) [NEWS](#) [ABOUT US](#)



Plug-in vehicles are coming to Chicago

Plug-In Vehicles are Coming to the Chicago Area

Plug-in electric vehicles help reduce our dependence on foreign oil, produce less pollution than conventional cars, and can help consumers save money — particularly with recent fluctuations in gas prices. Here in the Midwest, the potential for job growth in the auto industry is yet another reason to be excited about electric cars.

Metro-Chicago has the potential to be one of the leading markets for these new vehicles, and one of the first cities to fully embrace the electric car. Government support for public charging stations, entrepreneurial ingenuity in the business community and low-cost power available for nighttime charging are just some of the ingredients that will make Chicago a market leader.

RECENT ELECTRIC VEHICLE NEWS


[Midwest Energy News: Is the Chevy Volt Dangerous?](#)

[Detroit News: Chevy Volt sees best sales yet; Nissan Leaf still ahead](#)


[Green Car Reports: National Plug-In Day Roundup](#)

Clean Cities is the U.S. Department of Energy's (DOE) flagship alternative-transportation deployment initiative. The program helps consumers and fleets reduce petroleum use by establishing local coalitions, providing funding opportunities, information resources and technical assistance. Clean Cities promotes a wide variety of alternative fuels and technologies, including electric vehicles. There are two Clean Cities coalitions active in Illinois, the [Chicago Area Clean Cities Coalition](#) and the [St. Louis Regional Clean Cities Coalition](#).

Project Get Ready is an initiative of the Rocky Mountain Institute, designed to help cities get ready for the introduction of PEVs. The initiative's website, www.projectgetready.com, links users to a menu of "readiness" activities that cities can adopt, a database of activities underway throughout the world, and additional resources and reports.




NEW: PGR Webinar
Minutes: August 2, 2011



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What is Project Get Ready?
Project Get Ready is a non-profit initiative led by Rocky Mountain Institute® (RMI), preparing cities for the introduction of plug-in hybrid vehicles. In collaboration with a wide array of partners and technical advisers, RMI is helping cities to develop plug-in vehicle infrastructure.

What is Project Get Ready?
Project Get Ready is a non-profit initiative led by Rocky Mountain Institute, in conjunction with a wide array of partners and technical advisers. Project Get Ready will:

- * Create a dynamic "menu" of strategic plug-in readiness actions including the "business case" for each action.
- * Provide a web database of American and international plug-in readiness activities.
- * Convene at least 20 cities as well as technical players regularly to discuss their lessons learned and best practices, and report these conversations on our website and materials.
- * Much more!

How Ready is America?
Early plug-in leaders are critical to drive the momentum for early EV launches, but share lessons with cities who are following closely behind. Thanks to plug-in pioneers like Project Get Ready partner cities, the roadmap to EV readiness has become much clearer for the rest of the country.

In a recent report by Roland Berger Strategy Consultants and RMI's Project Get Ready, America's fifty largest metro areas are evaluated on factors like regulatory requirements, incentives, public charging, permitting and planning and power reliability.

Get involved

Send us your ideas

Become a technical adviser

Become a sponsor

Appendix B

Appendix B provides a summary of the PEV-related programs and activities within Illinois. This list was developed by the Illinois Electric Vehicle Advisory Council and appears in its Final Report to Governor Pat Quinn and the General Assembly (December 30, 2011).

Program: Illinois Commerce Commission's Plug-In Electric Vehicle Initiative
Agency: Illinois Commerce Commission
Authority: Voluntary Initiative

The Illinois Commerce Commission ("ICC") launched the Initiative on Plug-In Electric Vehicles (PEV Initiative) in September of 2010 to assess the potential impacts of plug-in electric vehicles (PEVs) on the electric grid and to evaluate the need for new regulatory policies to accommodate this new era of transportation.

Goals of the PEV Initiative include:

- Determining the impact of the initial deployment of PEVs on the state's electric grid;
- Determining potential/future regulatory considerations necessary to accommodate PEVs;
- Establishing consistent statewide policies for managing PEV infrastructure and use;
- Generating accelerated interest by auto manufacturers for introduction of PEVs into Illinois markets; and
- Crafting consumer education and outreach information components.

Ameren Illinois Company (Ameren), Commonwealth Edison Company (ComEd), and MidAmerican Energy Company (MidAmerican) provided initial assessments to the ICC regarding the impact on the electric grid of the introduction of PEVs. The ICC invited and received comments on those initial assessments from a wide range of stakeholders. The electric utilities and stakeholders then provided a subsequent set of comments responding to questions asked by the ICC. Additionally, the ICC held two Electric Policy Committee meetings to discuss the issues raised in those comments. Information regarding the PEV Initiative, including the initial assessments from Ameren, ComEd, and MidAmerican on the potential grid impact of PEV introduction and all subsequent comments, are posted at <http://www.icc.illinois.gov/electricity/pev.aspx>.

In October of 2011, the PEV Initiative requested that interested parties participate in informal workshops to aid the ICC on five specific issues: (1) defining the scope of what waivers (if any) to the Integrated Distribution Company rules⁵ would allow for appropriate participation by utilities in facilitating the adoption of PEVs and related services while not hampering the ongoing development of a competitive market for PEV-related programs and services; (2) developing customer education and outreach plans; (3) modeling and assessment of potential localized reliability impacts; (4) expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization, and to prevent unnecessary and

⁵ Title 83, Sections 452.230 and 452.240 of the Illinois Administrative Code.

duplicative investment in infrastructure for on-peak charging; and (5) developing a petition to the ICC to clarify the legal status of public charging stations. Reports summarizing the outcome of these workshop topic discussions are expected to be submitted to the ICC by December 31, 2011.

Program: Illinois Green Fleets Program
Agency: Illinois EPA and Chicago Area Clean Cities Coalition
Authority: Voluntary Initiative

This marketing and recognition program serves as the umbrella initiative encompassing the Illinois EPA's Alternate Fuels Rebate Program, EV Car-Sharing Grant Program, Illinois Clean Diesel Grant Program, No-Idling initiative, and general information on alternate fuels and vehicles, contacts for auto manufacturers and conversion companies in Illinois, and locations of E85 stations. In addition, the Illinois Green Fleets Program also serves to recognize, educate, and help facilitate the creation of "green fleets" for small businesses, local government units, corporations, and schools and universities throughout the state.

Launched in 2000, Illinois was the first state to implement a green fleets program. Fleets in Illinois that implement alternate fuel vehicles, switch to one or more "American fuels," and help us meet the mission of "Green Environment, Green Energy, and Green Economics for a Green Illinois" can be designated as an Illinois Green Fleet. Over 100 green fleets throughout the state have been designated and are listed on the Illinois Green Fleets website, with information on the numbers and types of alternate fuels and vehicles each fleet has implemented. Designation events usually take place at luncheons or similar meetings where one or more state officials are on hand to recognize the new green fleets, helping to create media exposure and facilitating other fleet managers to network and possibly becoming green fleets themselves.

The Chicago Area Clean Cities coalition (CACC) and DCEO have coordinated with the Illinois EPA during the past several years in hosting fleet seminars, workshops, and conferences on various topics aimed at highlighting current green fleet members and providing interested fleet managers information, contacts, and similar valuable resources for assistance. This coordination has been effective to create and support green fleets throughout the state. The Illinois EPA, CACC, and DCEO can build upon this networking to assist with public outreach and hosting seminars, conferences, and similar events to provide information on state programs and resources, grant opportunities, private fleet operations and local governments that have implemented electric vehicles and charging infrastructure, and other relevant topics to promote EV and infrastructure deployment.

Information on all of the IEPA's Illinois Green Fleets programs and initiatives, including grant and rebate application materials for their alternate fuel and clean diesel programs, are posted at www.illinoisgreenfleets.org.

Program: Illinois Alternate Fuels Rebate Program
Agency: Illinois EPA
Authority: Alternate Fuels Act (415 ILCS 120)

The Alternate Fuels Rebate Program is an important component of the IEPA's Illinois Green Fleets initiative. This program currently has an annual appropriation of \$1 million and provides rebates up to \$4,000 for any Illinois resident, small business, corporation, local government unit, school, or other organization that acquires alternate fuel vehicles that operate with clean, alternate fuels. Eligible fuels include natural gas, electricity, ethanol (E85), biodiesel (at least 20 percent biodiesel blend), propane, and hydrogen. To date, the IEPA has issued over \$5.3 million in rebates for nearly 4,000 applicants acquiring 8,000 alternate fuel vehicles. The program offers three types of rebates:

- (1) A "Vehicle Rebate" for the purchase of a new alternate fuel vehicle from an Illinois car dealership. This type of rebate is common for vehicles that operate with natural gas, electricity, and propane. Heavy-duty trucks and buses that have an alternate fuel option but not available for sale in Illinois are also eligible for the program. The vehicle rebate amount is for 80 percent of the incremental cost of the alternate fuel-version of the vehicle, as compared to its conventional fuel make and model counterpart, up to \$4,000. If the alternate fuel vehicle does not have a conventional make and model counterpart, the rebate amount is 10 percent of the base MSRP, up to \$4,000.
- (2) A "Conversion Rebate" for the conversion of an existing conventional vehicle to operate with an alternate fuel. This type of rebate is common for conventional vehicles to be converted to natural gas, propane, and E85. The conversion system must be EPA- or CARB-certified, per federal law, and the conversion of the vehicle must occur in Illinois. The conversion rebate amount is 80 percent of the cost of the conversion, up to \$4,000.
- (3) A "Fuel Rebate" is for the purchase of E85 to be used in a flexible-fuel vehicle or biodiesel blends of at least 20 percent to be used in a diesel truck or bus. The E85 or biodiesel must be used in the vehicle at least 50 percent of the time during the calendar year, as demonstrated by submitted fuel receipts or fuel purchase invoices and the miles driven during the year. The amount of the E85 fuel rebate is established at either \$340 or \$450 per vehicle, depending on miles driven, while the biodiesel fuel rebate is based on 80 percent of the average incremental cost of the biodiesel, versus regular diesel. The fuel rebate application is submitted at the end of the calendar year, and each vehicle is eligible to receive this rebate for three consecutive years.

Program: EV Car-Sharing Grant Program
Agency: Illinois EPA
Authority: Alternate Fuels Act (415 ILCS 120)

In the Spring 2011 legislative session, the General Assembly passed HB 2903 and its companion SB 1615 to add a new incentive in the Alternate Fuels Act to enable car-sharing organizations to receive funding from the Alternate Fuels Fund in each of fiscal years 2012 and 2013 for the purchase of electric vehicles. The amount of the funding to be made available is based on a projection of the remaining funding in the Alternate Fuels Fund, if any, towards the end of each of those fiscal years after all needed rebate monies are taken into account in the Alternate Fuels Rebate Program. There are two known car-sharing organizations that will be eligible for this program, I-GO and Zip Car. The funding that could be made available to these

organizations is for no more than 25 percent of their project costs involving the purchase of new electric vehicles and the implementation of new EV charging infrastructure. The grant funding for these organizations can only be used to purchase new electric vehicles from Illinois car dealerships.

The Illinois EPA has met with I-GO and Zip Car for their comments and recommendations on the various components of this grant program as the Illinois EPA proceeds with the rulemaking. The rules are expected to be finalized by Spring 2012, in time for the EV Car-Sharing Grant Program to be in place for potential grants to be awarded in FY 2012.

Program: Discounted Registration Fee for EVs in Illinois
Agency: Illinois Secretary of State's Office
Authority: Illinois Vehicle Code (625 ILCS 5/3-805)

Per Illinois statute, the Office of the Illinois Secretary of State administers a discounted vehicle registration fee for EVs. The two-year registration fee for EVs is \$36 compared to a one-year fee of \$99 for conventional vehicles (a discount of \$81 per year). To be eligible for the discounted fee, vehicles must be propelled by an electric engine, not utilize motor fuel, and weigh 8,000 pounds or less.

Program: Kane County Electric Vehicle Infrastructure Ordinance
Agency: Kane County, Illinois
Authority: County Ordinance passed by Kane County Board

In anticipation and support of EVs, the Kane County Board appointed a Task Force comprised of industry experts, municipal and county representatives, and special interest groups to create both a Kane County Electric Vehicle Infrastructure (EVI) ordinance covering unincorporated areas of Kane County, and a model EVI ordinance for other units of local government. The ordinance principally addresses regulations, design guidelines, standards and signage for EV Infrastructure on public and private property. The Task Force utilized model ordinances from the Puget Sound Region in the state of Washington, and Auburn Hills, Michigan to assist in their efforts.

The Task Force completed a draft of the Ordinance in November 2011, and the Kane County Board is anticipated to consider the ordinance for adoption in February 2012. The County is working on a website to provide additional information and supporting documents for the Kane County ordinance and model ordinance, which are expected to be online in January 2012.

The Kane County ordinance is organized into four main sections:

- Section 1 – Definitions
- Section 2 – Vehicles and Traffic
- Section 3 – Zoning
- Section 4 – Battery Provisions

Program: Fox Valley Electric Auto Association Events and Outreach
Agency: Fox Valley Electric Auto Association

Authority: Voluntary Member Organization

The Fox Valley Electric Auto Association (FVEAA) promotes efficient and clean EV use and educates the public on these issues. They also help their members to become EV drivers. The FVEAA was formed in 1975, around the time of the first oil embargo, and was incorporated in the State of Illinois in 1979. It became a chapter of the Electric Auto Association (EAA) in 2004.

The FVEAA holds monthly meetings, hosts and publicizes EV events, publishes a monthly EV newsletter, and features members' EVs and blogs. Information about FVEAA's events, membership, and EV resources is available at the association's website: <http://fveaa.org/>

Program: Chicago Area EV Charging Station Project
Agency: City of Chicago Department of Environment
Authority: Voluntary Initiative; State and Federal Grants

The City of Chicago and State of Illinois partnered to deploy a comprehensive network of charging station infrastructure, creating the densest network of DC Fast Charge stations in the world. Utilizing approximately \$1 million of state capital funding (granted by DCEO) and \$1 million of federal Clean Cities funding from the American Recovery and Reinvestment Act (ARRA), the partners were able to leverage almost \$7 million in private investment to develop the Chicago Area EV Charging Station Project. The project will deploy 73 DC Fast Charge and 207 Level 2 EV charging stations throughout the Chicago area. The funding recipient, 350Green, partnered with I-GO, Zipcar, Walgreens, Sears, Simon Properties, Whole Foods, Jewel and others to host the charging stations. Charging stations will also be installed at O'Hare and Midway Airports and at the Illinois Tollway oases. Station locations and availability can be found at www.mychargepoint.net.

Program: EVs in Car-Sharing Fleets
Agency: I-GO Car-Sharing and Zipcar, Inc.
Authority: Voluntary Initiatives; State and Federal Grants

I-GO Car Sharing, Chicago's nonprofit car sharing organization, has launched a \$2.5 million electric vehicle project that will add 36 all-electric vehicles to its fleet and up to 18 solar charging stations providing clean power to its cars. Once completed, I-GO will have the largest EV fleet in the Midwest, and it will use more solar power to charge electric vehicles than anywhere else in the country. Previously, I-GO announced the locations of 12 solar-powered charging stations throughout the Chicago region, including one at the CTA Park and Ride lot at the Kimball Brown Line El stop, several JEWEL-OSCO stores, the Illinois Institute of Technology, the Village of Oak Park, the City of Evanston and Uncommon Ground restaurant. The remaining locations will be announced soon. The canopies will be installed in early 2012. Each solar charging station will form a canopy that covers four parking spaces and will be able to power two EVs. Two spaces will be reserved for I-GO at each location, and the others will be available to the public. Each canopy will be topped with 44 solar panels, for a capacity of 10 kilowatts. In aggregate, the canopies will produce about 200,000 kilowatt-hours (kWh) of electricity

annually, which will power as much as 600,000 miles driven per year. As a result, I-GO and its members could save as many as 17,000 gallons of gasoline each year.

Zipcar, the world's largest car-sharing company, is rolling out an electric vehicle car-sharing program in the Chicagoland area. The program consists of up to 25 electric vehicles, charged by dedicated Level 2 charging stations installed by 350Green. These electric vehicles will complement the existing fleet of nearly 500 vehicles throughout the Chicagoland area to provide Zipcar members with additional environmentally sound transportation options. Zipcar has not yet announced its final locations or strategic partners, but they include leading building and parking management companies, retailers, building owners, health systems, local transit and universities.

Program: **Bloomington-Normal EVTown**
Agency: **Bloomington-Normal Electric Vehicle Task Force**
Authority: **Voluntary Initiative; Federal Grant**

EVTown (www.evtown.org) represents a broad-based effort to establish Bloomington-Normal, Illinois as a model electric vehicle community. The effort is being driven by a coalition of business officials, government representatives, and other interested stakeholders who firmly believe electric vehicles offer tremendous benefits to individual vehicle owners, businesses, and the greater community.

EVTown aims to concisely provide members of the Bloomington-Normal community with all of the information needed to evaluate available electric vehicle technologies. In addition, EVTown is intended to connect interested persons with opportunities to personally view, test drive, and purchase electric vehicles.

The EVTown effort originated after Town of Normal Mayor Chris Koos brought together several representatives of business, government and education to discuss how our community could prepare for electric vehicles. As discussions evolved, it became apparent that there was a tremendous opportunity for Bloomington-Normal to become a national leader in electric vehicle deployment. A decision was then made to establish the Bloomington-Normal Electric Vehicle Task Force and initiate the EVTown effort. EVTown is an effort of the Bloomington-Normal Electric Vehicle Task Force. The Task Force consists of leaders from various local governments, businesses and educational institutions.

The EVTown initiative is designed to prepare the Bloomington-Normal community for the rapidly growing EV industry. This forward-thinking strategy will make the community more attractive to emerging businesses and their employees, thus strengthening its economic base. It will complement the many other environmental initiatives already underway, and it will enhance economic opportunities and the quality of life for residents.

In late November 2011, as part of the EVTown initiative, the Town of Normal announced an Electric Vehicle Charging Station Grant Program open to area businesses and organizations interested in installing charging stations on their properties. This grant program is supported by

funds provided by the U.S. Department of Energy under its Energy Efficiency and Conservation Block Grant Program. See <http://www.normal.org/Files/EVChargingStation.pdf> for more information.

Program: Village of Oak Park EV Sticker Fee Waiver
Agency: Oak Park Village Board of Trustees
Authority: Municipal Ordinance

As the benefits of electric vehicles are recognized on a local level, suburban municipalities – including the Village of Oak Park – are taking steps to support and encourage electric vehicle use. In November 2010, the Oak Park Village Board of Trustees passed an electric vehicle ordinance to provide free parking and city vehicle stickers for EV drivers in 2011 and 2012. Although the program's use has been minimal so far due to limited electric car availability on a regional scale, Oak Park's Sustainability Manager reports increased inquiries about fast-track permitting from residents adding chargers to their garages in preparation for vehicle purchase.

ILLINOIS COMMERCE COMMISSION

Initiative on Plug-In Electric Vehicles

Workshop 3

**Modeling and Assessment of Potential Localized
Reliability Impacts**

December 20, 2011

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Introduction

In October 2011, as part of the Illinois Commerce Commission (ICC or Commission) Initiative on Plug-In Electric Vehicles (PEVs), interested parties were invited to participate in informal workshops to explore the following five issues:

1. Defining the scope of what waivers, if any, to the Integrated Distribution Company (IDC) rules would enhance the utilities' role in facilitating the adoption of PEVs and related services;
2. Developing customer education and outreach plans;
3. Modeling and assessment of potential localized reliability impacts;
4. Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging; and
5. Developing a petition to the Commission to clarify the legal status of public charging stations.

This report focuses specifically on issue 3, "Modeling and assessment of potential localized reliability impacts", and includes the following discussion areas:

- **PEV Industry Landscape** – Includes forecasts of electric vehicle (EV) adoption in Illinois; such forecasts reflect updates from those presented in the utilities' initial assessments of the impact of the introduction of PEVs on the distribution system.
- **Existing Load Addition Processes** – Includes a discussion of existing utility practices and policies for addressing customer load additions.

- **Potential Distribution System Impacts** – Includes a discussion of potential impacts to local distribution system assets from PEV charging.
- **Load Management Tools** – Includes a discussion of processes, policies and technologies available today to mitigate impacts of PEV charging, and those expected to become available or that may be developed in the next ten years.

Working Group

The working group consisted of representatives from Ameren Illinois Company (Ameren Illinois), Citizens Utility Board, Commonwealth Edison Company (ComEd), DBT USA, Inc., the Staff of the ICC, MidAmerican Energy Company (MidAmerican), Northern Indiana Public Service Company, and Village of Oak Park.

Section 1: PEV Industry Landscape

In December 2010, Ameren Illinois, ComEd and MidAmerican presented initial assessments of the impact of the introduction of PEVs on the distribution system which included projections of PEV sales in the U.S. and Illinois. At that time, it was noted that there was a significant amount of uncertainty with respect to expected adoption of PEVs by consumers and a wide variance in industry estimates of adoption rates driven by the numerous factors that affect adoption, including gasoline prices, PEV battery costs, production capacity, perceived importance of environmental issues, and availability of charging infrastructure.

While significant uncertainty remains with respect to adoption forecasts, more recent information has been obtained to further refine the outlook for PEV adoption in Illinois.

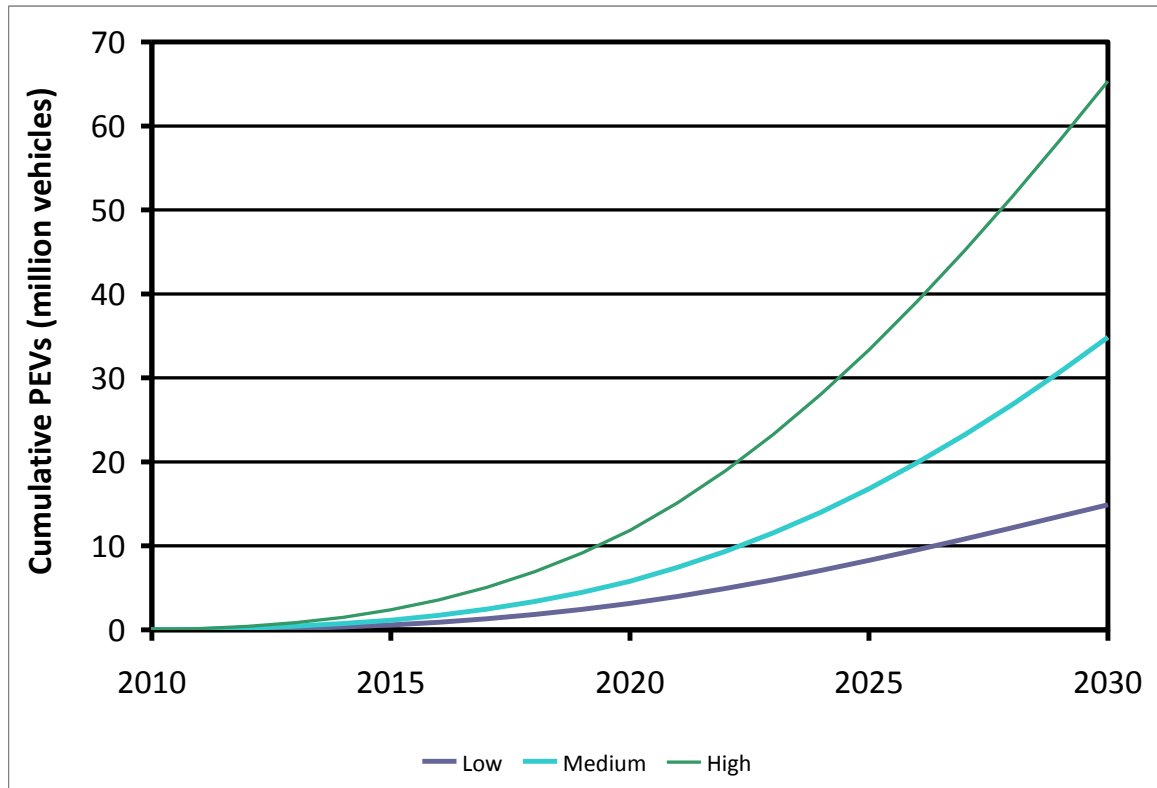
Just as it was the case in the utilities' initial assessments, it should be noted here that any projections for PEV sales and adoption included in this report are shown solely for purposes of providing a "frame of reference" for possible adoption rates, and do not represent predictions of expected PEV adoption.

In its report, "Transportation Electrification, A Technology Overview", the Electric Power Research Institute (EPRI) includes low, medium and high scenario projections of the penetration of PEVs, in terms of both the cumulative number of PEVs in the United States and as a percentage of the total vehicle fleet in the United States.¹ These projections are illustrated in Figures 1 and 2, respectively.

Note the projection of cumulative PEVs in the U.S. included in the EPRI report is through 2015. The projection through 2030 shown in Figure 1 was obtained from EPRI by request.

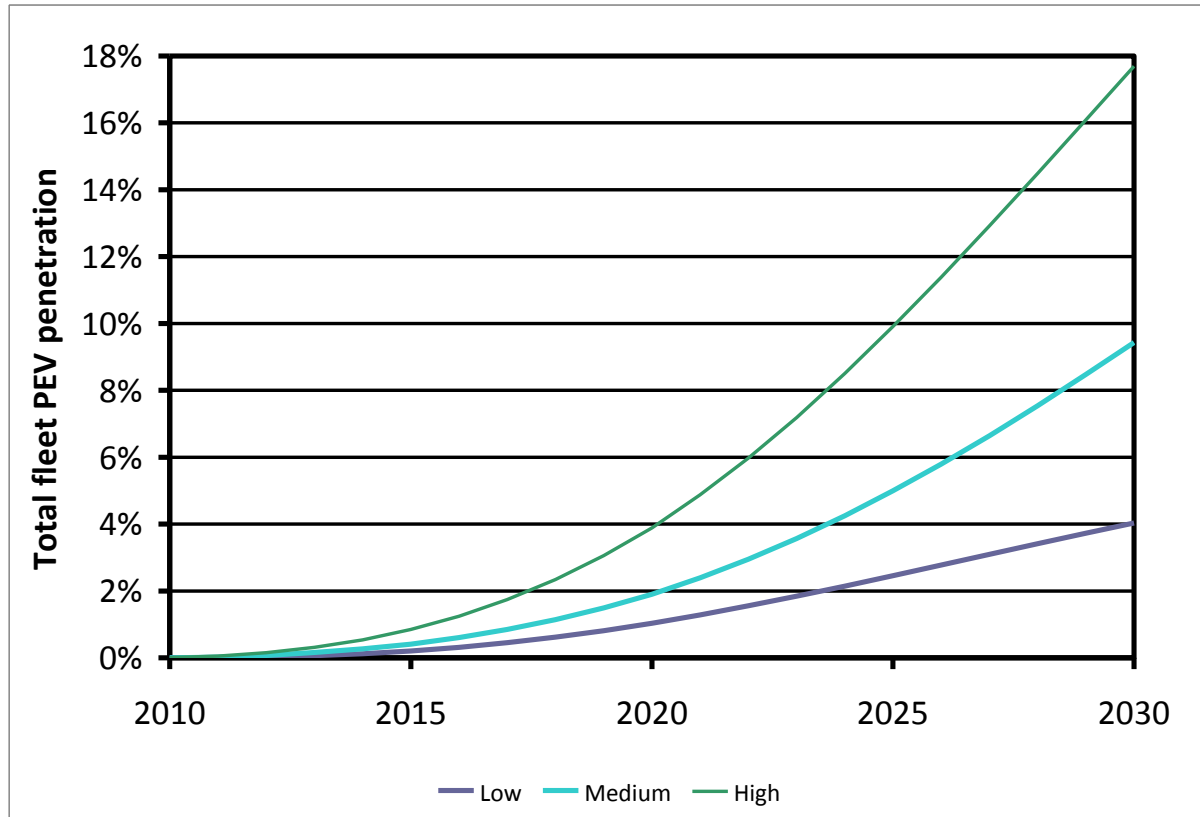
¹ "Transportation Electrification, a Technology Overview" EPRI, Palo Alto, CA, July 2011, 1021334, Figures 4-1, 4-3

Figure 1: Cumulative PEVs in the



U.S.

Figure 2: PEV Percentage of Total U.S. Vehicle Fleet



Similar projections specific to the State of Illinois were also obtained from EPRI. Figure 3 shows a projection of the cumulative number of PEVs in Illinois through 2030 and Figure 4 shows a projection of PEVs as a percentage of the total vehicle fleet in Illinois through 2030.

As these figures illustrate, EPRI projects Illinois PEV adoption to range between about 110,000 and 415,000 vehicles (1% and 3.6% of total Illinois vehicles, respectively) by 2020; and between 537,000 and 2,400,000 vehicles (3.9% and 17% of total Illinois vehicles, respectively) by 2030.

Figure 3: Cumulative PEVs in Illinois

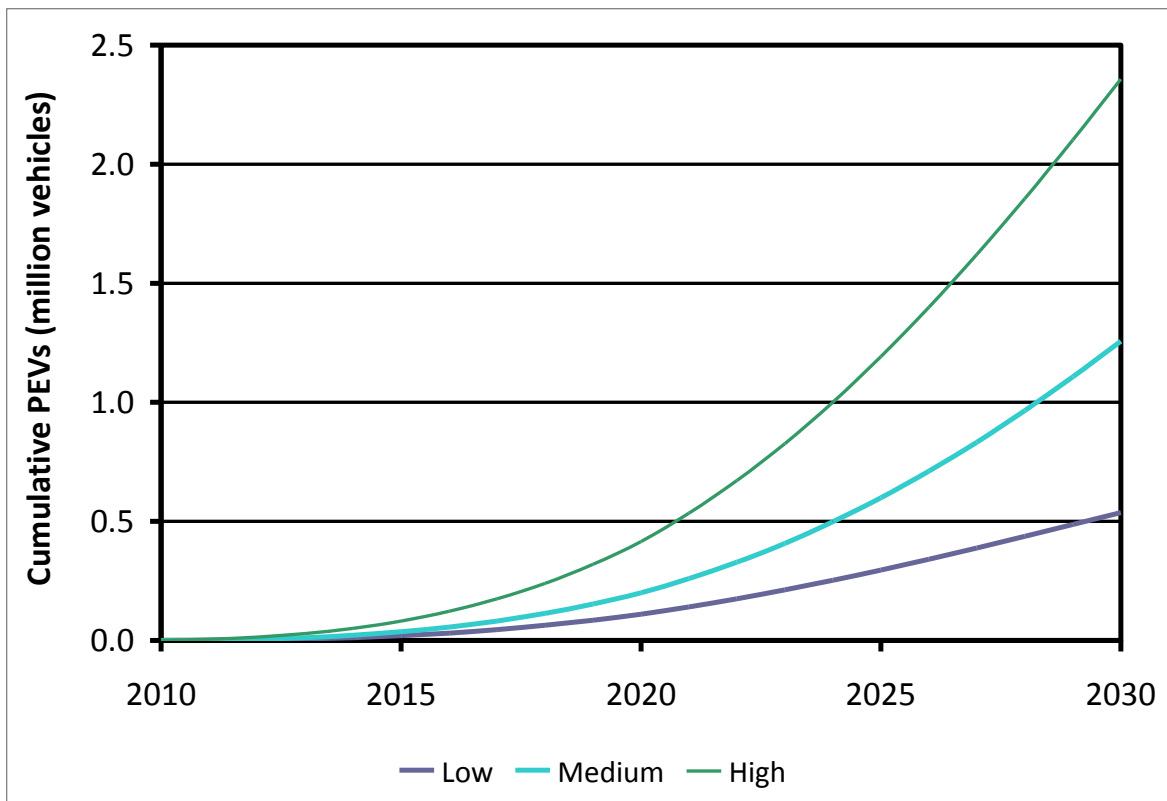


Figure 4: PEV Percentage of Total Illinois Vehicle Fleet

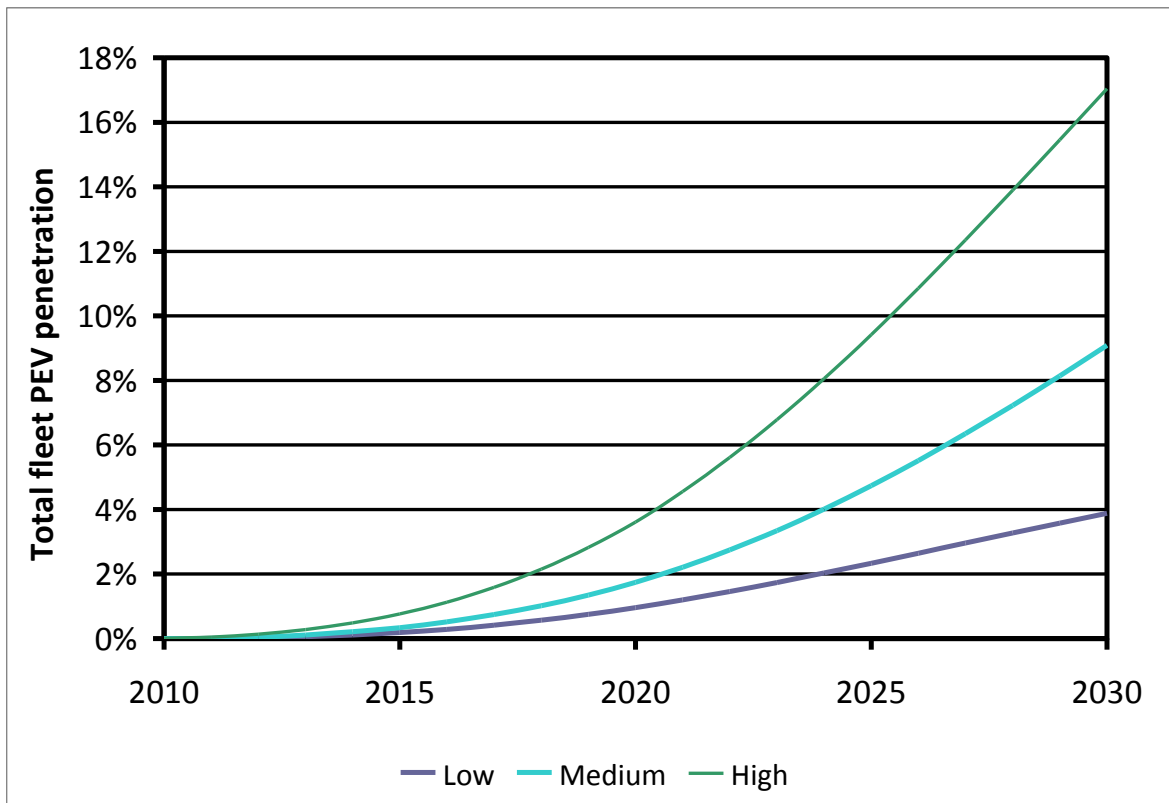
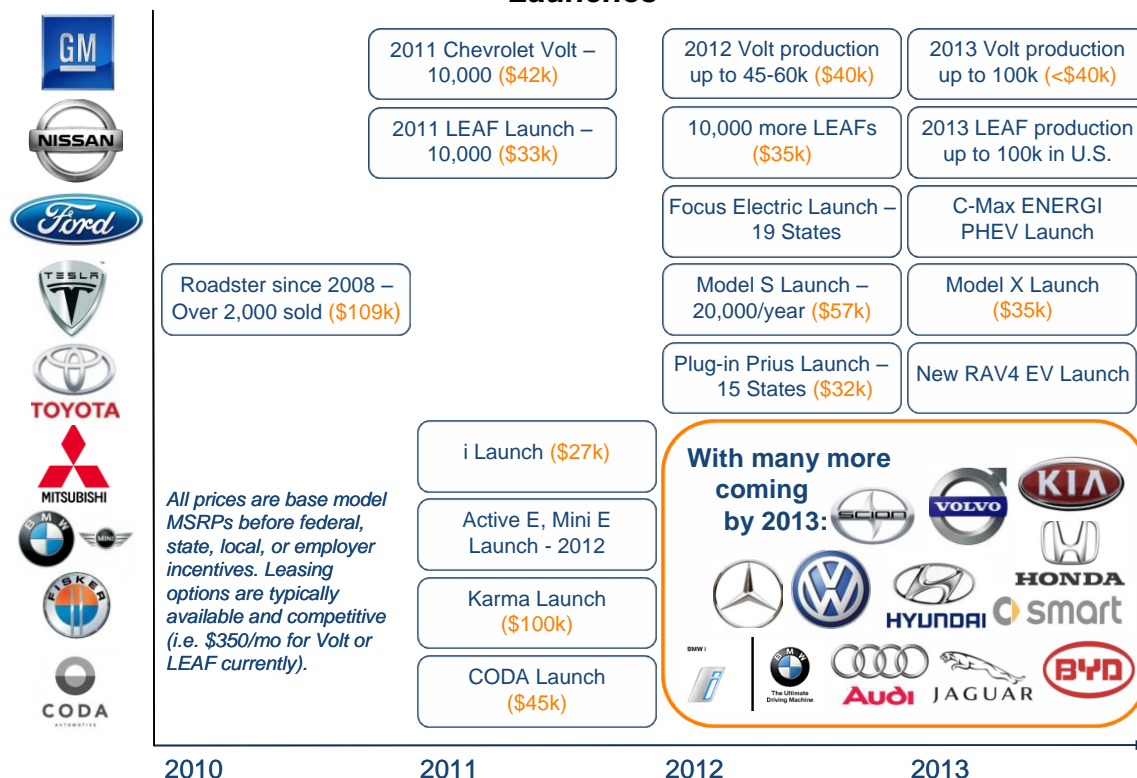


Figure 5, included in a recent publication from the Edison Electric institute (EEI), “The Utility Guide to Plug-In Electric Vehicle Readiness”, illustrates the anticipated launches of commercial passenger PEVs in the United States.²

² “The Utility Guide to Plug-In Electric Vehicle Readiness”, EEI, Washington, D.C., November 2011. p 13
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Figure 5: Anticipated U.S. Commercial Passenger PEV Launches



Currently, there are two levels of EV charging available that meet national Society of Automobile Engineers (SAE) standards.

Level 1: This charging level requires access to a standard, grounded, three-prong 120-volt outlet with a ground fault circuit interrupter, or installation of electric vehicle supply equipment (EVSE) with a standard, grounded, three-prong 120-volt outlet by a qualified electrician. This level of charging can take 8-12 hours to fully charge a PEV. A comparable electric load is a hand-held hair dryer.

Level 2: This charging level requires installation of a 240-volt charging station by a qualified electrician. PEV manufacturers have different capabilities for Level 2 charging. For example, the Mitsubishi i-MiEV and the Nissan Leaf can charge at a rate of about 15 amps (or 3.2 kW) where the Ford Focus PEV will be capable of charging at 27.5 amps (or 6.6 kW). This load is comparable to that of a residential central air

conditioner. Level 2 charging will typically charge a PEV in half the time it takes to charge at Level 1.

Level 3 or Fast-Charging: Manufacturers are developing United States (U.S.) standards for fast-charging technologies (commonly known as DC fast-charging) for commercial or public use that can recharge certain types of PEVs in 30 minutes or less. There are currently Japanese and European standards for fast-charging equipment, but no U.S. standard currently exists. As a result, only a limited number of PEV types will initially be able to utilize fast charging. However, there are proposed Level 3 charging stations planned for installation in the near term utilizing the Japanese standard.

This fast-charging equipment can charge a PEV battery to 80% capacity and the typical supply voltage is 480 volts three phase. There are some manufacturers that have plans to introduce a 208 volt three phase supplied charging station which can be installed in commercial district locations where 208 volt service is commonly available.

Section 2: Existing Load Addition Processes

Ameren Illinois, ComEd and MidAmerican each have a process for customers to notify the serving utility of significant load additions and electric service upgrades. Each of these utilities has engineering representatives who are available either via telephone or in person to discuss any service capacity or service upgrades that are needed by the customer.

Ameren Illinois – Ameren Illinois's current processes for receiving and evaluating proposed customer load additions are based on its Standards and Qualifications for Electric Service which are on file with the Commission and state (in part):

"In applying for electric service from Company, and receiving such service thereafter, Customer shall: 1. Inform Company as to the size and characteristics of the load that is

to be initially and thereafter served, the location of the Premises, the date Customer anticipates the need for said service and any special circumstances or conditions affecting the supply of electric service by Company.” The Illinois Construction Engineering (ICE) Team is the normal point of contact for all Ameren Illinois engineering and capacity requests. If a customer is installing a Level 1 charger, Ameren Illinois requires no further information. If a customer is installing a Level 2 charger, Ameren Illinois informs the customer to consult with a qualified electrician because a permit may be required by the local inspection agency for the installation of the circuit to the garage and any necessary upgrade to the customer’s electric panel. The ICE Team also reviews the load on the transformer, and if necessary, advises the customer that work may be required by Ameren Illinois to serve this additional load. An Ameren Illinois representative investigates the situation and contacts the customer. At this point, the project follows the normal Ameren Illinois process for any electric service upgrade. For larger load additions, which may include Level 3 chargers, an Ameren Illinois electrical engineer responsible for distribution planning will review the circuit for any system impacts the resulting new load might create.

ComEd – ComEd’s current processes for evaluating system component loading and for receiving and evaluating proposed customer load additions are stated in its Terms and Conditions, on file with the Commission:

“The Company has representatives that can meet with the retail customer or applicant and discuss issues that arise concerning the provision of electric service at the premises. It is recommended that the retail customer or applicant consult with such representatives well in advance of an anticipated service commencement date or change in electric service requirements. It is the retail customer's or applicant's responsibility to secure information from the Company pertaining to the distribution

system facilities available at the premises, and it is the retail customer's or applicant's responsibility to obtain such information in a timely manner prior to the purchase or lease of equipment or the completion of design plans that pertain to the provision of electric service.” Additionally stated is “For a situation in which a retail customer anticipates the need for an alteration to or a change in the distribution facilities provided by the Company for such retail customer, it is the retail customer's responsibility to notify the Company as far in advance of the need for the change as possible so that arrangements can be made to facilitate any necessary changes to the Company's distribution facilities.”

Customers adding load can notify ComEd by calling ComEd's New Business organization at 866-NEW-ELEC (866-639-3532) and selecting Option 2. This will help to ensure that the ComEd equipment connected to customers' homes is capable of serving the additional load. ComEd expects that any customer that is adding enough load that it could impact the utility system will likely be using a qualified electrician. ComEd also expects the electrician will be familiar with ComEd's processes for load additions and the need to contact to ensure adequate distribution facilities.

MidAmerican – MidAmerican's current process for electric load additions is described below.

The flow of the process is as follows:

1. Customers adding load can notify MidAmerican by calling into the general call center phone number. A call center representative will route them to the appropriate engineering technician for that customer's area.
2. The engineering technician or engineer meets with the customer and determines the amount and characteristics of the load to be added.

3. Engineering conducts an evaluation of the load requested and the adequacy of current facilities to serve it or if upgraded facilities will be required. This evaluation would include determining upstream impacts. Electric System Planning would be involved, if needed, on larger electric system impacts.
4. If contributions would be required from the customer in accordance with our tariffs, a proposal would be presented to the customer. Once a signed agreement with the customer was received, proceed to step 6.
5. If customer contributions are not required, proceed to step 6.
6. Engineering would prepare a work order that would be sent to the field operations group.
7. The field operations group would complete work and close out the work order.

To summarize, Ameren Illinois, ComEd and MidAmerican each have existing processes for managing customer load additions that are applicable to customer installations of PEV charging facilities. However, given that many residential customers may not be familiar with these processes, the utilities can raise consumer awareness by providing such information (including contact information for the respective utility) on company websites, printed brochures or other materials developed for purposes of educating consumers about PEV adoption.

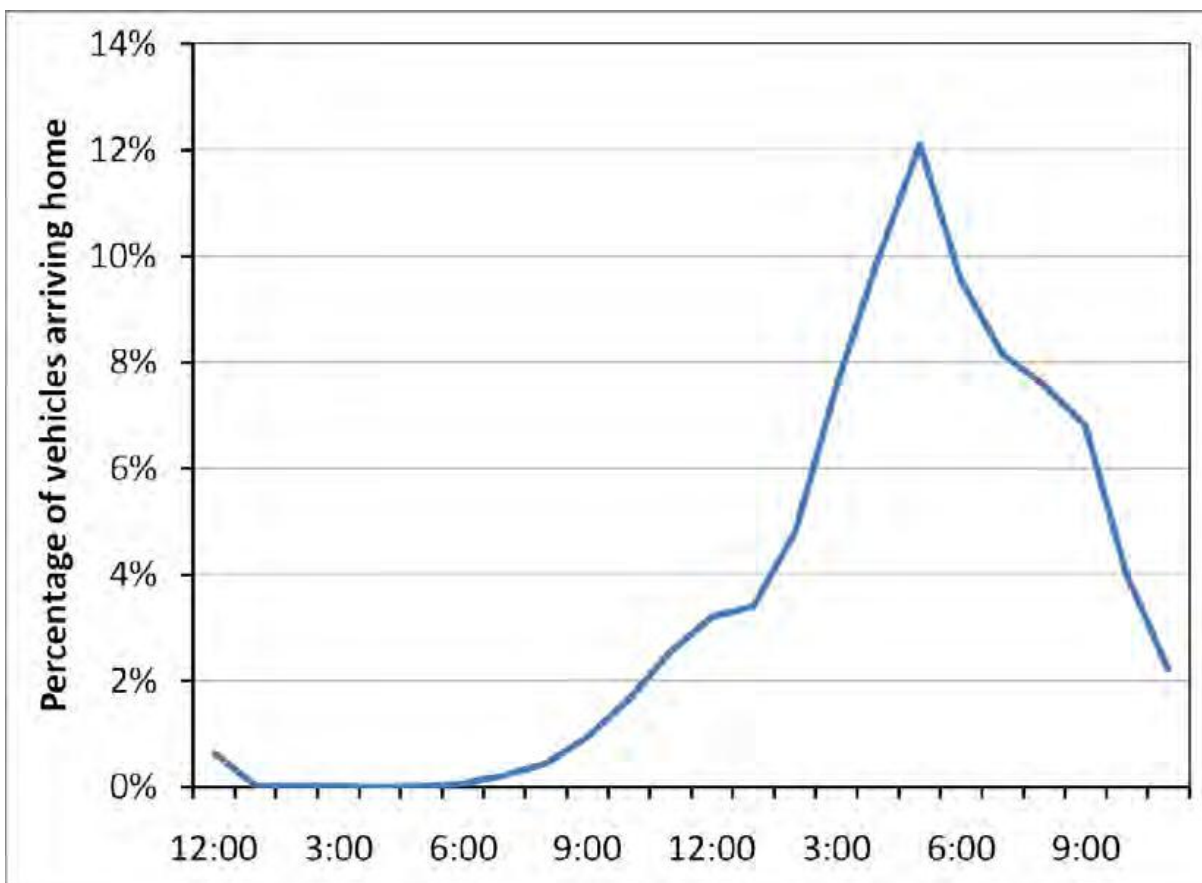
Section 3: Potential Distribution System Impacts

Given the projections for PEV adoption shown in Section 1, PEV charging is not expected to have widespread impacts to the distribution system. Also, EPRI studies indicate that diversity in home arrival times facilitates relatively well distributed PEV

charging load on a system-wide basis.³ Figure 6 illustrates such a distribution of home arrival times from EPRI.

³ “*Transportation Electrification, a Technology Overview*” EPRI, Palo Alto, CA, July 2011, 1021334, Figure 5-1

Figure 6: Home Arrival Time Distribution



However, since PEV adoption is likely to be “clustered” by geographic area and subsequently by distribution system components, local distribution assets could be impacted if PEV charging at Level 2 (240 volt, 30 amps) or greater is not appropriately managed. Level 1 charging (120 volt, 15-20 amps) poses minimal threat to the distribution system. The Impact Study⁴ that ComEd conducted with EPRI identified service transformers as particularly vulnerable to impacts of Level 2 charging.

The penetration level at which PEV charging would impact local distribution equipment is dependent on a number of factors, including the existing size and available capacity of equipment (e.g., service transformers), the number of customers served by the

⁴ Commonwealth Edison PEV Distribution Impact Study, EPRI, November 2010 (“Impact Study”)
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equipment, and other loads being added by customers served by the equipment. Because of this variability, effective load management tools will be important to mitigate impacts of EV charging not only to the PEV owner, but to other customers served by the same distribution equipment. Such tools are discussed in Section 4 of this document.

Section 4: Load Management Tools

Current Tools

The use of currently available time-variable rates, such as ComEd's Rate BESH, Ameren Illinois's Rider PSP – Power Smart Pricing, Rider RTP – Real Time Pricing or Rider HSS – Hourly Supply Service, and MidAmerican's Optional Time-of-Day Residence Electric Service, Optional Commercial Time-of-Day Service or Non-Residential Real Time Pricing, could largely mitigate impacts of PEV charging by providing incentives for PEV owners to charge their vehicles at night, shifting the associated load to off-peak periods. Similarly, advance notification to the utility prior to installing PEV charging rated at Level 2 or greater enables the utility to proactively assess the electrical capacity of local distribution equipment to serve the additional PEV charging load. Such notification is consistent with existing utility practices for managing customer load additions and should be encouraged through effective consumer outreach and education, utilizing various communications channels and media.

Ameren Illinois – Today, Ameren Illinois uses a program titled Transformer Load Management (TLM) to monitor loading on distribution transformers. TLM uses an algorithm (based upon kilowatt hours consumed) to calculate individual customer demand and coincident peak demand on single phase and three phase transformer stations. Upon notification that a customer has purchased an EV and plans to add a charging station, an Ameren Illinois engineering representative will review TLM data to

ensure an existing transformer has adequate capacity to serve the increased load. In addition to the ability to research loading on individual transformers, an Ameren Illinois engineer is able to generate a report of all transformers that are overloaded by a specified percentage. The report can be generated for overloaded transformers in a particular district, substation, or circuit.

Finally, a report of overloaded transformers is generated from a program titled System Load Snapshot (SLS). This report is only available in areas that have Automated Meter Reading (AMR) capability and is distributed to Division Supervising Engineers. SLS data is gathered on peak days in winter and summer. The report lists pole-mounted transformers that are loaded to at least 140% and pad-mounted transformers that are loaded to at least 100%.

In all cases, it is incumbent on the engineer to analyze the data and ensure a transformer is actually overloaded (the overload is not the result of faulty data such as customers assigned to an incorrect transformer). Ameren Illinois has a standard covering the upgrade of transformers or splitting of loads once a specific loading is reached that is higher than the load data threshold limits used in the report.

In addition, Ameren Illinois's Business Center takes any general customer inquiry calls on electric vehicles. The customer is informed of resources available at <http://www.ameren.com/Environment/ElectricVehicles/Pages/ElectricVehicles.aspx>.

Note: Ameren Illinois currently informs customers of the potential to choose an electric supplier; however, Ameren Illinois can not market or promote specific electric supply rates. For Distribution Delivery Service customers, excluding those taking service under DS-5 Lighting Service, time-variable rates are included as options for supplying energy to customers that charge EV's.

ComEd – One example of an outreach effort is ComEd’s recently launched EV web page (www.ComEd.com/EV), which includes information for consumers regarding the need to notify ComEd if Level 2 or greater PEV charging is anticipated, and provides opportunities for both residential and commercial customers to electronically send such information to ComEd so the appropriate actions can be taken to proactively accommodate the customer’s additional charging load.

MidAmerican – MidAmerican is in the process of developing electric vehicle information to be included on its corporate website.

Potential Future Tools

Improvements in both smart grid and customer-side technology will enable more seamless, automated management of a variety of customer loads, including PEV charging. In order to leverage these advancements in technology, charging stations must be made “smart grid enabled”. That is, they must be capable of two-way communications with the smart grid and be able to accept both control signals and provide load information back to the grid.

For example, load control technology, such as that used by many utilities for managing residential air conditioner load, can be easily adapted to PEV charging. This may include simple “on/off” remote control of charging equipment, or more advanced “throttling” of the charging level based on local distribution system loading.

An Advanced Metering Infrastructure (AMI) such as that which ComEd is deploying and which Ameren Illinois intends to deploy, with its two-way communications, can in the future facilitate the effective management of PEV charging load in the following ways:

- Time variable rates coupled with AMI and in-home devices can provide real-time electric pricing information to consumers that give them greater control over their electric usage, while minimizing the grid impacts of PEV charging.
- The two-way communications of an AMI network can support intelligent charging stations that allow consumers to automatically set PEV charging based on electricity price signals.
- AMI can provide real-time information about loading on the electric distribution system and automatic notification to utilities when the load on local distribution system equipment, such as service transformers, reaches a level that requires attention. This automatic notification allows overloaded equipment to be upgraded before it fails, benefitting both PEV owners and their neighbors.

Conclusion

Given the projections for PEV adoption discussed in this document, PEV charging is not expected to have widespread distribution system impacts for Ameren Illinois, ComEd, or MidAmerican. The utilities have existing load addition processes in place to manage the addition of charging facilities that may occur in the near term; and they continue to investigate new technologies and tools that may facilitate more automated and seamless integration of PEV charging with the grid as PEV adoption becomes more widespread in the future. Additionally, time-variable rates play an important role in encouraging customers to move PEV charging and other loads to off-peak periods, which benefits both consumers and the electric grid.

Illinois Commerce Commission Initiative on Plug-In Electric Vehicles

Workshop 4 Rates

January 27, 2011

I. Introduction and Background

The participating members of the Rates working group, which represent a diverse group of environmental, consumer, utility, Retail Electric Supplier (RES) and vehicle charging interests,¹ appreciate this opportunity to offer further comment and guidance to the Illinois Commerce Commission (Commission or ICC) regarding the use of electricity rates and pricing options to promote the efficient use of utility transmission and distribution systems and generation assets by owners of Plug-In Electric Vehicles (PEV). In its October 15, 2011 letter inviting stakeholders to participate in workshops, the ICC requested this working group to address the following questions and issues:

(4) Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging

Current statutory and/or regulatory barriers may impede broad availability of dynamic pricing options that could prevent negative systemic impacts from at home charging of PEVs at peak load times. The Commission would be interested in proposals for statutory solutions. If such solutions are needed, stakeholders may wish to provide an analysis and assessment of the potential for dynamic, real-time or time-of-use pricing to prevent or disincent home-charged PEVs from contributing to peak-load congestion and ancillary service power needs, otherwise negatively affecting energy efficiency and/or other programs, and generally increasing the need for existing generation, transmission or distribution system infrastructure upgrades. (ICC letter to Plug-In Electric Vehicle Initiative Stakeholders, Oct. 15, 2011).

II. Scope of the Report

The Rates working group defined “rate options” broadly to include both the tariffed electric supply service offered by utilities and the competitive retail supply offerings of Retail Electric Suppliers (RESs), as well as demand response and other load management programs that may be offered (now or in the future) by utilities, RESs or independent Curtailment Service Providers (CSP). While the team obtained initial clarification that

¹ The following organizations were actively represented on the Rates working group: ICC Staff; Citizens Utility Board; CNT Energy; Illinois Science & Technology Coalition; Natural Resources Defense Council; Environmental Law & Policy Center; Illinois Competitive Energy Association; Carbonday; Plug In Vehicle Solutions; MidAmerican Energy Co.; Ameren Illinois Utilities; and ComEd.

the focus of the Commission's inquiry was on residential customers, the scope was subsequently expanded to include non-residential customers as well as delivery service rates. Therefore, the original December 29, 2011 report, which was limited to recommendations concerning supply service offerings and demand response programs for residential and non-residential PEV customers, has been expanded herein to address delivery service rates.

Because the primary focus of the question posed by the Commission concerned "barriers," the group's review began with an assessment of the tariffed supply services currently offered by utilities (namely, fixed, seasonal and hourly supply rates) and services expected to be offered in light of recent Illinois legislation (peak-time rebate), as well as current supply service offerings made by RES in Illinois and in other states. A survey of PEV rate offerings by utilities and RESs in other states is set forth in Attachment A to this Report. After reviewing the status quo and expectations of future offerings, the group's discussions next focused on "what services are needed" or "what services are missing" in order to determine what barriers, if any, may exist to rates that could "improve current distribution, transmission and generation asset utilization and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging." Specifically, the threshold question posed to Team 4 was: "Are there any time-variant supply offerings or demand response programs other than what is currently available from utilities and the competitive retail market that are either needed or would help 'to improve current distribution, transmission and generation asset utilization and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging'?"

Delivery service matters were addressed in a similar fashion, beginning with an identification of rates or functionalities deemed desirable by a stakeholder and working those issues through to the identification of legal or regulatory barriers.

III. Consensus Opinions

A. Residential Rates

The overall consensus of the Rates working group is that encouraging PEV owners to charge their vehicles primarily during off-peak hours – whether through time-variant supply service offerings, demand response, or other load management programs – could benefit consumers and the distribution, transmission, and generation system. Participants noted that:

- Time-variant rates, whether provided by the utility or a RES, can provide PEV owners with the opportunity to save on their energy costs by moving vehicle charging and other electricity usage off peak, when electricity prices on such rates are typically lower.
- Moving the PEV charging load to off-peak hours could help defer the need to increase the capacity of electric distribution system assets, particularly in areas where several PEVs may be clustered on the same local distribution equipment.

- Moving PEV charging off-peak could lower or mitigate the impact on the marginal cost of electricity for all consumers by achieving more efficient utilization of generating capacity.
- Through battery storage, off-peak PEV charging can help integrate energy from intermittent renewable resources (*e.g.*, nighttime wind) onto the electric grid.

With respect to residential customers, the consensus opinion of the group is that there currently are no known statutory or regulatory barriers to either supply services or demand response programs that could “improve current distribution, transmission and generation asset utilization and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging.”

1. Supply Pricing

Regarding residential supply services, the consensus was largely based on the belief that sufficient supply offerings are or will be available in the future. Specifically, the existing residential Real-Time Pricing Programs (RTP) available from the Ameren Illinois Company (AIC) and Commonwealth Edison (ComEd) today, and/or the potential for future time-variant price offerings from RESs, as evidenced by offerings available in other states meet these objectives.

The view points of stakeholders ranged from strong believers to the cautiously supportive. For example, on one end of the consensus opinion is the composite view that instead of emulating what other states have done with supply rates (which predominantly is to adopt time-of-use supply rate offerings for utilities) and pursuing second best solutions to financially incent customers to charge during off-peak hours, Illinois initially should promote its unique RTP programs to PEV owners to encourage efficient use of the distribution system and create savings opportunities. The group reached consensus that RTP, whether provided by the utility or a RES, sends the most efficient price signal to customers. Historically in Illinois, RTP has been beneficial to customers, particularly those with larger loads, as evidenced by utilities’ annual reports.² PEV owners should also be able to choose from any myriad of dynamic price offerings the RES community may offer. RESs are fully capable of meeting any such needs and are reasonably expected to do so, as evidenced by offerings in other states.³

On the other end of the consensus, other parties have taken what may be characterized as a “wait and see” approach, calling for ongoing study and close monitoring of PEV owner acceptance and responsiveness to RTP and any future time-variant price offerings in the competitive retail market through regular discussions and reporting regarding status. In fact, the group agreed that further study of PEV charging and rates should be conducted

² For copies of the annual RTP reports filed by AIC and ComEd, see ICC Dockets 06-0617 and 06-0691, respectively.

³ In addressing the ability of RESs utilizing AIC or ComEd’s purchase of receivables with consolidated billing service to bill time-variant supply charges, both utilities confirmed that RESs utilizing the “bill ready” format can bill such charges today, assuming the appropriate metering is in place. Therefore, there are also no operational barriers to such RES offerings.

in the near-term and over the next several years, as PEVs begin to arrive in Illinois. Specifically, the group agreed that customer acceptance and utilization of, and responsiveness to, available time-variant pricing structures should be monitored and reviewed regularly. Parties also identified the need to conduct load studies of PEV charging patterns, using AMI (Advanced Metering Infrastructure) or other meters as appropriate. However, at this end of the consensus, the parties reserved judgment as to whether something more in the way of supply rate offerings should be pursued or required in the future, a view which was not held by all parties.

While no stakeholder advocated making time-variant supply pricing mandatory for EV owners at this time, the group did identify a need to incorporate time-variant supply pricing options into PEV owner education plans as soon as possible. The group agreed that customer education on pricing options should be conducted on a competitively neutral basis, encouraging PEV owners to investigate and consider the many potential benefits of all available time-variant pricing options (whether from RESs or utilities), as well as responsible charging practices (*e.g.*, charging at night during off-peak hours).

2. Demand Response

With respect to residential demand response services, consensus was again reached that there were no known regulatory or legal barriers to utility or market service offerings. Illinois utilities subject to the Commission's Integrated Distribution Company Rules (83 Ill. Adm. Code 452, Subpart B) are not prohibited from offering tariffed demand response programs, and there are no known impediments to RESs or CSPs making such offerings. While all of the potential types of demand response programs were not extensively discussed and no specific program recommendations are being offered here, parties generally viewed the peak-time rebate program mandated by recent legislation as potentially beneficial to both PEV owners and the broader goal of shifting PEV charging (and other loads) to off-peak periods. Parties also recommended that utilities and other parties explore, alongside their deployments of smart grid infrastructure, the potential for future load management programs, such as programs to develop and take advantage of the potential of grid-connected PEVs to provide ancillary grid services (*e.g.*, as frequency modulation).

Concerns were expressed by some parties regarding the potential cost effectiveness of demand response programs designed specifically to curtail PEV charging loads. In discussing the potential of the most basic of demand response programs, direct load control programs (*e.g.*, the central air conditioner cycling programs in operation today), questions were raised about the value of controlling charging. One observation was that a Level 1 charging load is similar to that of a hair dryer, and thus the cost of installing load control equipment may not be justified by the benefits. The potential load curtailment value of Level 2 (or higher) charging is more promising, but there remains uncertainty as to whether PEVs – at least in the at-home charging context – will be connected at the time when a curtailment event is called. Some stakeholders believe that it is less likely that PEV owners will charge their vehicles at their residences during time

of peak demand. Thus, the potential barriers to PEV-specific demand response programs contemplated here are of an economic nature.

B. Non-Residential Rates

Regarding non-residential supply services and demand response program, consensus was again reached that there were no known regulatory or legal barriers to utility or market service offerings. It was observed that concerns about the incremental loading of distribution and transmission assets is less of an issue with larger consumers than smaller ones in light of the facilities in place to serve such loads. From a generation asset and consumer standpoint, however, off-peak PEV charging among non-residential customers would still be desirable, leading to more efficient utilization of existing assets.

Utility supply service to larger non-residential customers has already been declared competitive in the AIC and ComEd's service territories, making hourly-pricing the only utility supply service available to AIC customers with demands of 150 kilowatts and greater and to ComEd customers with demands of 100 kilowatts and greater, respectively. Thus, it is expected that large non-residential customers managing fleet vehicle, employee or customer charging would work with their RESs to develop the appropriate pricing plans to economically accommodate the new loads, to the extent it is material, or simply heed the price signals sent by the hourly-priced default supply service from utilities. With respect to the relatively smaller non-residential customers, however, the vast majority of which are still eligible for fixed-price default supply service from utilities, education on the benefits of time-variant pricing options available from utilities and the retail market would be helpful in the same way it would be for residential customers, as previously discussed above.

C. Delivery Services

One party identified the need to enable unbundled subtractive metering, where the electrical load of a PEV may be separately tracked and distinguished from the load at any given customer premises using either on-board meters or a meter at the charging station. Such meters would not be owned by the utility. Rather they would be owned by the customers or possibly another entity, but interconnected with and relied upon by utility billing systems. As proposed, this capability is predicated upon an AMI network with a "plug and play" interoperable communications architecture that enables the application of secondary metering and layers of communication networks. The proposed objective of developing multiple layers of secondary metering applications is to create a cell phone model for residential, non-residential and public charging based on customer location and vehicle, which enables among other things:

- Separate supply price offerings for PEV usage.
- Supplier portability, where the usage associated with charging of a PEV at any location is traced back to and reflected on a single customer account.

- A tracking capability that enables advanced demand-side management techniques, including correlating PEV charging load and PEV discharging capabilities to specific distribution transformers.
- A new basis for applying road taxes to replace shortfalls stemming from corresponding decreases in gasoline tax receipts

Of these potential capabilities that would be enabled, only one was extensively discussed by parties--supplier portability, where a PEV owner could charge the vehicle at any customer premise and through subtractive metering, trace that usage and associated charges back to a single account. While no consensus was achieved on the desirability of this functionality or the associated capabilities, stakeholders concluded that there are no known legal or regulatory impediments to the adoption of a Commission policy mandating unbundled subtractive metering. In fact, the Commission has already exercised its authority to unbundle metering. (*See generally* ICC Docket No. 99-0013, Order (Oct. 4, 2000)), although not in a subtractive metering context. Nevertheless, parties did identify a general mix of potential operational, regulatory and legal barriers that may exist to the establishment of the central clearinghouse functions and protocols that would be required to settle transactions and enable supplier portability. Due to the breadth of all the different ways in which such a function and associated protocols could be structured and the time limitations, stakeholders did not attempt to address the specific barriers associated with each of the potential approaches discussed. Rather, the parties generally concluded that legislation likely would be required to fully enable supplier portability.

While many parties were intrigued by the concept, other parties questioned, among other things, what the costs of enabling the functionality would be; whether it was worth pursuing in light of potential alternatives; and whether it potentially could discourage EV purchases by making matters too complicated and costly. One party questioned the value of deviating from the current “pay at the pump” model. Further, from a utility operations perspective, parties reserved judgment on the feasibility of the functions contemplated, identifying the need to create an extensive wholesale and retail settlement process among utilities and RESs to determine who is responsible for the supply and delivery charges.

In response, the party proposing the unbundled subtractive metering indicated that this full capability is not needed today to encourage PEV adoption, but will be needed in the future to continue its growth. What is needed now, in that party’s opinion, are policies that are conducive to exploring the potential capabilities and feasibility of unbundled subtractive metering.

Attachment A: Currently Available Plug-in Electric Vehicle-Specific Electricity Rates

(Last updated on December 22, 2011)

A. PLUG-IN ELECTRIC VEHICLE (PEV)-SPECIFIC TIME-OF-USE (TOU) RATES¹

State	Electricity Provider	Rate	Available to	Conditions & Incentives ²	Period	Summer Season ³		Winter Season ⁴	
						Price (cents per kWh) ⁵	Hours	Price (cents per kWh) ⁶	Hours
AL	Alabama Power	BEVT: Business Electric Vehicle - Time-of-Use ⁷	- Separately-metered commercial PEVs	- Minimum service period of 5 years	On-peak	17.8	12pm-7pm (Mo-Fr)	N/A	N/A
					Intermediate peak	7.3	10am-12pm, 7pm-9pm (Mo-Fr)	7.3	7am-9pm (Mo-Fr)
					Off-peak	4.5	All other times	4.5	All other times
AK	Alaska Electric Light and Power	X1: Experimental Residential Off-Peak Electric Vehicle Charging ⁸	- Separately-metered residential PEVs	- Limited to 10 customers	On-peak ⁹	9.8	7am-10pm	11.9	7am-10pm
					Off-peak	5.6	All other times	5.6	All other times
AZ	Arizona Public Service Company	Experimental Rate Schedule ET-EV: Electric TOU - Electric Vehicles ¹⁰	- PEV households ¹¹	- Must participate in demand response and data collection - Experimental rate ends on 12/31/2014	On-peak	24.8	12pm-7pm (Mo-Fr)	20.2	12pm-7pm (Mo-Fr)
					Off-peak	6.5	All other times	6.5	All other times
					Super off-peak	4.2	11pm-5am (Mo-Fr)	4.2	11pm-5am (Mo-Fr)
CA	Los Angeles Department of Water and Power	R-1, Rate B: Time-of-Use Service, Electric Vehicle Discount ¹²	- Separately-metered residential PEVs - PEV households	- Off-peak rate increases by 2.5 cents/kWh after the first 500 kWh/month - Separately-metered PEVs eligible for \$2,000 L2 EVSE rebate	High-peak	16.1	1pm-5pm (Mo-Fr)	6.5	1pm-5pm (Mo-Fr)
					Low-peak	8.1	10am-1pm, 5pm-8pm (Mo-Fr)	6.5	10am-1pm, 5pm-8pm (Mo-Fr)
					Off-peak	2.2	All other times	2.5	All other times

¹ Data are drawn from electricity providers' rate schedules and websites, as cited throughout, based on research performed by NRDC. NRDC identified an initial list of rates using data from the U.S. Department of Energy's Alternative Fuels & Advanced Vehicles Data Center (<http://www.afdc.energy.gov/afdc/>) and supplemented this list through additional research and information provided by individual electricity providers. This list may be an incomplete summary of PEV-specific TOU rates available from U.S. electricity providers.

² This column provides only on a subset of conditions and incentives applicable to each rate. When known, the table lists whether the customer or electricity provider is responsible for paying to install a second meter under a separately-metered PEV rate; however, it is not always clear from rate schedules which party bears this responsibility.

³ Different electricity providers define the summer and winter seasons differently. Check electricity providers' rate schedules to determine specific dates of rate applicability.

⁴ See note 3.

⁵ The rates reported here are taken from reported schedules or tariffs and do not always reflect the same types of charges when compared across providers (e.g., some rates include only energy charges while others also include delivery charges). Check providers' specific rate schedules to determine the charges included in each of these rates.

⁶ See note 5.

⁷ <http://www.alabamapower.com/pricing/pdf/BEVT.pdf>.

⁸ <http://www.aelp.com/tariff/Schedule%20of%20Fees%20and%20Charges.PDF>; <http://www.aelp.com/rates/ourrates.htm>.

⁹ Alaska Electric Light and Power's rates differ between the utility's "peak season" (November to May) and "off-peak season" (June to October). In the context of the experimental PEV rate, however, the term "off-peak" is not used to describe the off-peak season, but rather the *hours* between 10pm and 7am during both the peak and off-peak seasons.

¹⁰ <http://images.edocket.azcc.gov/docketpdf/0000129728.pdf>.

¹¹ Arizona Public Service Company has also committed to explore rates for separately-metered residential PEVs.

¹² <http://www.ladwp.com/ladwp/cms/ladwp001710.jsp>; <http://www.ladwp.com/ladwp/cms/ladwp002056.jsp>.

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(Last updated on December 22, 2011)

State	Electricity Provider	Rate	Available to	Conditions & Incentives ²	Period	Summer Season ³		Winter Season ⁴	
						Price (cents per kWh) ⁵	Hours	Price (cents per kWh) ⁶	Hours
	Pacific Gas and Electric	E-9: Experimental Residential Time-of-Use Service for Low Emission Vehicle Customers (<i>Proposed Changes</i>) ¹³	<ul style="list-style-type: none"> - Separately-metered residential PEVs - PEV households 	<ul style="list-style-type: none"> - Monthly customer charge covers separate metering - Enrollment limited to 30,000 customers - Experimental rate ends on 12/31/2014 	Peak	38.5	2pm-9pm (Mo-Su), 3pm-7pm (Sa, Su)	27.9	2pm-9pm (Mo-Su), 3pm-7pm (Sa, Su)
					Part-peak	21.4	7am-2pm, 9pm-11pm (Mo-Fr), 7am-3pm, 7pm-11pm (Sa, Su)	17.4	7am-2pm, 9pm-11pm (Mo-Fr), 7am-3pm, 7pm-11pm (Sa, Su)
					Off-peak	11.0	All other times	11.3	All other times
	San Diego Gas and Electric	EV-TOU: Domestic Time-of-Use for Electric Vehicle Charging ¹⁴	<ul style="list-style-type: none"> - Separately-metered residential PEVs 	<ul style="list-style-type: none"> - Customer pays to install PEV meter socket - Minimum service period of 1 year 	On-peak	25.7	12pm-8pm	17.5	12pm-8pm
					Off-peak	16.7	All other times	16.9	All other times
					Super off-peak	14.4	12am-5am	14.6	12am-5am
		EV-TOU2: Domestic Time-of-Use for Households with Electric Vehicles ¹⁵	<ul style="list-style-type: none"> - PEV households 	<ul style="list-style-type: none"> - Minimum service period of 1 year 	On-peak	25.7	12pm-6pm	17.5	12pm-6pm
					Off-peak	16.7	All other times	16.9	All other times
		EPEV-X, EPEV-Y, EPEV-Z: Domestic Experimental Plug-in Electric Vehicle Service ¹⁶	<ul style="list-style-type: none"> - Separately-metered residential PEVs 	<ul style="list-style-type: none"> - Limited to 1,000 Nissan Leaf owners - Customer receives free L2 EVSE - Random assignment to an experimental rate group (X, Y, or Z) - Experimental rates will end on or before 11/30/2012 	On-peak (X/Y/Z)	27.1 (X) 29.3 (Y) 38.5 (Z)	12pm-8pm	17.8 (X) 25.1 (Y) 34.2 (Z)	12pm-8pm
					Off-peak (X/Y/Z)	16.5 (X) 18.5 (Y) 15.4 (Z)	All other times	17.1 (X) 16.7 (Y) 13.7 (Z)	All other times
					Super off-peak (X/Y/Z)	13.9 (X) 7.7 (Y) 6.7 (Z)	12am-5am	14.3 (X) 8.3 (Y) 7.1 (Z)	12am-5am
	Sacramento Municipal Utility District	R: Residential Service, Optional Time-of-Use Rate Option 1, Plug-in Electric Vehicle Option ¹⁷	<ul style="list-style-type: none"> - Sub-metered residential PEVs - Separately-metered residential PEVs 	<ul style="list-style-type: none"> - Utility provides a sub-meter unless customer pays to install a separate PEV meter - \$7.20 residential TOU service charge waived 	On-peak	24.0	2pm-8pm (Mo-Fr)	10.8	7am-10am, 5pm-8pm (Mo-Fr)
					Off-peak ¹⁸	8.4	All other times	7.5	All other times

¹³ Table reflects proposed changes submitted by Pacific Gas and Electric (PG&E) to the California Public Utilities Commission (CPUC) on September 26, 2011, in response to a CPUC order. PG&E's current existing experimental rate uses both a TOU and a tiered rate system, but the CPUC has ordered PG&E to simplify the rate by eliminating the tiered component. http://www.pge.com/notes/rates/tariffs/tm2/pdf/ELEC_3910-E.pdf.

¹⁴ http://www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EV-TOU.pdf.

¹⁵ http://www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EV-TOU-2.pdf.

¹⁶ http://www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EPEV-X.pdf; http://www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EPEV-Y.pdf;

http://www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EPEV-Z.pdf.

¹⁷ <http://www.smud.org/en/residential/rates/Documents/1-R.pdf>.

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(Last updated on December 22, 2011)

State	Electricity Provider	Rate	Available to	Conditions & Incentives ²	Period	Summer Season ³		Winter Season ⁴	
						Price (cents per kWh) ⁵	Hours	Price (cents per kWh) ⁶	Hours
	Southern California Edison	TOU-EV-1: Domestic Time-of-Use Electric Vehicle Charging ¹⁹	- Separately-metered residential PEVs	- Utility provides a separate meter - Minimum service period of 1 year	On-peak	27	12pm-9pm	21	12pm-9pm
					Off-peak	12	All other times	12	All other times
		TOU-D-TEV: Time-of-Use-Domestic Tiered Electric Vehicle Charging ²⁰	- PEV households	- Two-tiered rate: (T1) up to 130% of baseline use, (T2) above 130% of baseline use - Includes peak-time rebate (not shown)	On-peak (T1/T2)	19 (T1) 53 (T2)	10am-6pm (Mo-Fr)	13 (T1) 25 (T2)	10am-6pm (Mo-Fr)
					Off-peak (T1/T2)	13 (T1) 24 (T2)	All other times	12 (T1) 23 (T2)	All other times
	GA	Georgia Power	TOU-PEV-1: Time of Use - Plug-in Electric Vehicle ²¹	- PEV households - Minimum service period of 1 year	Super off-peak (T1/T2)	10 (T1) 15 (T2)	12am-6am	10 (T1) 16 (T2)	12am-6am
					On-peak	19.3	2pm-7pm (Mo-Fr)	Same as summer rates	
					Off-peak	5.8	All other times		
	HI	Hawaiian Electric	Residential TOU EV: Residential Time-of-Use Service with Electric Vehicle Pilot ²²	- PEV households - Three-tiered rate: (T1) first 350 kWh, (T2) 350-1,200 kWh, (T3) after 1,200 kWh - Utility may require load control - Limited to 1,000 customers on Oahu, 300 in Maui County, and 300 on Hawaii Island (across all experimental PEV rates) - Experimental rate ends on 9/30/2013	Priority-peak (T1/T2/T3)	22.1 (T1) 22.9 (T2) 23.7 (T3)	5pm-9pm (Mo-Fr)	Same as summer rates	
					Mid-peak (T1/T2/T3)	19.1 (T1) 19.9 (T2) 20.7 (T3)	7am-5pm (Mo-Fr), 7am-9pm (Sat-Sun)		
					Off-peak (T1/T2/T3)	11.1 (T1) 11.9 (T2) 12.7 (T3)	All other times		
		Hawaiian Electric	EV-R: Residential Electric Vehicle Charging Service Pilot ²³	- Separately-metered residential PEVs - Customer pays to install meter socket - Utility may require and implement load control - See <i>Residential TOU EV</i> rate above for participant limitations - Experimental rate ends on 9/30/2013	On-peak	19.8	7am-9pm (Mo-Fr)	Same as summer rates	
					Off-peak	11.1	All other times		

¹⁸ Off-peak rates reflect credits of 2.71 cent/kWh and 2.43 cent/kWh for PEVs in the summer and winter seasons, respectively, resulting in charges below non-PEV TOU rates. See *ibid.*

¹⁹ <http://www.sce.com/NR/sc3/tm2/pdf/ce114-12.pdf>; <http://www.sce.com/PowerandEnvironment/PEV/rate-charging-options.htm>.

²⁰ <http://www.sce.com/NR/sc3/tm2/pdf/CE324.pdf>; <http://www.sce.com/PowerandEnvironment/PEV/rate-charging-options.htm>.

²¹ http://www.georgiapower.com/pricing/pdf/2.30_TOU-PEV-1.pdf.

²² <http://www.heco.com/portal/site/heco/menuitem.8e4610c1e23714340b4c0610c510b1ca/?vgnextoid=f4dedb284f26b210VgnVCM1000005c011bacRCRD&vgnextfmt=default>;
<http://www.heco.com/vcmcontent/StaticFiles/FileScan/PDF/EnergyServices/Tariffs/HECO/HECORatesResidentialTOUEVPilot04-13-2011.pdf>.

²³ <http://www.heco.com/portal/site/heco/menuitem.8e4610c1e23714340b4c0610c510b1ca/?vgnextoid=f4dedb284f26b210VgnVCM1000005c011bacRCRD&vgnextfmt=default>;
<http://www.heco.com/vcmcontent/StaticFiles/FileScan/PDF/EnergyServices/Tariffs/HECO/HECORatesEV-RPilot04-13-2011.pdf>.

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State	Electricity Provider	Rate	Available to	Conditions & Incentives ²	Period	Summer Season ³		Winter Season ⁴	
						Price (cents per kWh) ⁵	Hours	Price (cents per kWh) ⁶	Hours
		EV-C: Commercial Electric Vehicle Charging Service Pilot ²⁴	- Separately-metered commercial PEVs ²⁵	- See <i>Residential TOU EV</i> rate above for participant limitations - Experimental rate ends on 9/30/2013	On-peak Off-peak	17.9 11.1	7am-9pm (Mo-Fr) All other times	Same as summer rates	
IN	Indianapolis Power and Light	EVX: Experimental Time of Use Service for Electric Vehicle Charging on Customer Premises ²⁶	- Separately-metered residential PEVs	- Utility will provide L2 EVSE and a separate meter to the first 150 customers - Minimum service period of 1 year - Experimental rate ends on 1/18/2013	Peak	12.2	2pm-7pm (Mo-Fr)	6.9	8am-8pm
					Mid-peak	5.5	10am-2pm, 7pm-10pm (Mo-Fr), 10am-10pm (Sat-Sun)	N/A	N/A
					Off-peak	2.3	All other times	2.8	All other times
	Northern Indiana Public Service Company	Rider 684: Plug-In Electric Vehicle Off-Peak Charging Rider (Pilot Program) (<i>Proposed</i>) ²⁷	- Separately-metered residential PEVs	- Utility will reimburse up to \$1,650 to 250 customers for EVSE and separate metering	On-peak Off-peak	9.8 ²⁸ 0 ²⁹	6am-10pm All other times	Same as summer rates	
KY	Kentucky Utilities	LEV: Low Emission Vehicle Service ³⁰	- PEV households	- Limited to 100 customers - Experimental rate ends on 7/31/2013	Peak	13.1	1pm-7pm (Mo-Fr)	13.1	10pm-6am (Mo-Fr)
					Intermediate	6.8	10am-1pm, 7pm-10pm (Mo-Fr)	6.8	12pm-10pm (Mo-Fr)
					Off-peak	4.7	All other times	4.7	All other times
	Louisville Gas and Electric	LEV: Low Emission Vehicle Service ³¹	- PEV households	- Limited to 100 customers - Experimental rate ends on 7/31/2013	Peak	13.3	1pm-7pm (Mo-Fr)	13.3	10pm-6am (Mo-Fr)
					Intermediate	6.9	10am-1pm, 7pm-10pm (Mo-Fr)	6.9	12pm-10pm (Mo-Fr)
					Off-peak	4.9	All other times	4.9	All other times

²⁴ <http://www.heco.com/portal/site/heco/menuitem.8e4610c1e23714340b4c0610c510b1ca/?vgnnextoid=f4dedb284f26b210VgnVCM1000005c011bacRCRD&vgnnextfmt=default;http://www.heco.com/vcmcontent/StaticFiles/FileScan/PDF/EnergyServices/Tariffs/HECO/HECOSchEV-CPilot04-13-2011.pdf>.

²⁵ Table shows prices for commercial customers with PEV loads below 5,000 kWh per month and that do not exceed 25 kW. Customers that exceed these levels are subject to different pricing under this rate. See *ibid*.

²⁶ <http://www.iplpower.com/library/IPL/Tariff%20Changes%202011/Rate%20EVX%20effective%2001.19.11.pdf>.

²⁷ This proposed rider is under review by the Indiana Utility Regulatory Commission (IURC). Information provided by Northern Indiana Public Service Company (NIPSCO) (<http://www.nipsco.com>).

²⁸ Based on proposed settlement to IURC case no. 43969 for Rate 611 (Rate for Electric Service Residential) and Rate 612 (Rate for Electric Service Single Family Residential - Heat Pump). See https://myweb.in.gov/IURC/eds/Modules/Ecms/Cases/Docketed_Cases/ViewDocument.aspx?DocID=0900b6318016ffbe.

²⁹ If approved, the rider would provide PEV customers with a rebate equal to the *energy charge* (2.9 cents plus the Fuel Cost Charge and all applicable riders) for each kWh used for off-peak PEV charging. Information provided by NIPSCO (<http://www.nipsco.com>).

³⁰ http://www.lge-ku.com/ev/ku_lev_tariff.pdf; <http://www.lge-ku.com/ev/qa.asp>.

³¹ http://www.lge-ku.com/ev/lge_lev_tariff.pdf; <http://www.lge-ku.com/ev/qa.asp>.

Attachment A: Currently Available Plug-in Electric Vehicle-Specific Electricity Rates

(Last updated on December 22, 2011)

State	Electricity Provider	Rate	Available to	Conditions & Incentives ²	Period	Summer Season ³		Winter Season ⁴	
						Price (cents per kWh) ⁵	Hours	Price (cents per kWh) ⁶	Hours
MD	Baltimore Gas and Electric	PEV TOU rate under development ³²							
MI	Consumers Energy	REV-1: Residential Home and Plug-in Electric Vehicle Time-of-Day ³³	- PEV households	- N/A	On-peak	18.6	2pm-6pm (Mo-Fr)	10.5	7am-11pm (Mo-Fr)
					Mid-peak	12.0	7am-2pm, 6pm-11pm (Mo-Fr)	N/A	N/A
					Off-peak	5.4	All other times	5.4	All other times
		REV-2: Residential Plug-in Electric Vehicle Only Time-of-Day ³⁴	- Separately-metered residential PEVs	- Limited to 2,500 customers - Utility will reimburse up to \$2,500 for L2 EVSE and separate metering	On-peak	18.6	2pm-6pm (Mo-Fr)	10.5	7am-11pm (Mo-Fr)
					Mid-peak	12.0	7am-2pm, 6pm-11pm (Mo-Fr)	N/A	N/A
					Off-peak	5.4	All other times	5.4	All other times
	Detroit Edison	D1.9: Experimental Electric Vehicle Rate (Option 1) ³⁵	- Separately-metered residential PEVs - PEV households	- Limited to 2,500 customers - Utility will reimburse up to \$2,500 for L2 EVSE and separate metering	On-peak	18.2	9am-11pm (Mo-Fr)	Same as summer rates	
					Off-peak	7.7	All other times		
	Indiana Michigan Power	RS-OPES/PEV: Residential Off-peak Energy Storage/Plug-in Electric Vehicle ³⁶	- Separately-metered residential PEVs - PEV households	- Utility will reimburse up to \$2,500 to 250 customers for L2 EVSE and separate metering	On-peak	14.1	7am-9pm (Mo-Fr)	Same as summer rates	
					Off-peak	3.9	All other times		
	Lansing Board of Water and Light	Rate No. 22: Residential PEV Charging Service ³⁷	- Separately-metered residential PEVs	- N/A	On-peak	13.6	7am-11pm (Mo-Fr)	Same as summer rates	
					Off-peak	5.3	All other times		
NV	Nevada Power	RHEVRR - TOU: Residential Hybrid Electric Vehicle Recharge Rider - Time-of-Use ³⁸	- PEV households	- Customers choose a smaller peak ratio and longer summer (Option A), or a larger peak ratio and shorter summer (Option B) - Minimum service period of 1 year	On-peak (A/B)	29.8 (A) 47.0 (B)	1pm-7pm	N/A	N/A
					Off-peak (A/B)	7.8 (A) 6.8 (B)	All other times	6.6 (A) 5.7 (B)	All other times
					Special HEV recharge period (A/B)	6.3 (A) 5.5 (B)	10pm-6am	5.2 (A) 4.4 (B)	10pm-6am

³² See <http://www.bge.com/waystosave/residential/resguidetips/pluginelectricvehicles/chargingyourphev/Pages/default.aspx>.

³³ <http://efile.mpsc.state.mi.us/efile/docs/16446/0002.pdf>.

³⁴ *Ibid.*

³⁵ <http://www.dteenergy.com/pdfs/detroitEdisonTariff.pdf>; <http://efile.mpsc.state.mi.us/efile/docs/16406/0003.pdf>.

³⁶ <http://efile.mpsc.state.mi.us/efile/docs/16496/0002.pdf>.

³⁷ http://www.lbw.com/rates/2011_ElectricRate22.pdf.

³⁸ <http://nvenergy.com/home/paymentbilling/timeofuse.cfm>; http://www.nvenergy.com/company/rates/snv/schedules/images/RHEVRR_South.pdf.

Attachment A: Currently Available Plug-in Electric Vehicle-Specific Electricity Rates
(Last updated on December 22, 2011)

State	Electricity Provider	Rate	Available to	Conditions & Incentives ²	Period	Summer Season ³		Winter Season ⁴	
						Price (cents per kWh) ⁵	Hours	Price (cents per kWh) ⁶	Hours
		GSHEVRR - TOU: General Service Hybrid Electric Vehicle Recharge Rider - Time-of-Use ³⁹	- Separately-metered commercial PEVs ⁴⁰	- Utility provides a separate meter - Minimum service period of 1 year	On-peak	27.5	1pm-7pm	N/A	N/A
					Off-peak	5.8	All other times	5.1	All other times
					Special HEV recharge	5.1	10pm-6am	4.5	10pm-6am
	Sierra Pacific Power	OD-RHEVRR - TOU: Residential Hybrid Electric Vehicle Recharge Rider - Time-of-Use ⁴¹	- PEV households	- Minimum service period of 1 year	On-peak	40.2	1pm-9pm (Mo-Fr)	10.2	5pm-9pm
					Mid-peak	21.8	10am-1pm, 6pm-9pm (Mo-Fr)	N/A	N/A
					Off-peak	7.5	All other times	7.5	All other times
					Special HEV recharge	6.7	10pm-6am	6.7	10pm-6am
		OGS-HEVRR - TOU: General Service Hybrid Electric Vehicle Recharge Rider - Time-of-Use ⁴²	- Separately-metered commercial PEVs ⁴³	- Utility provides a separate meter - Minimum service period of 1 year	On-peak	36.0	1pm-9pm (Mo-Fr)	10.3	5pm-9pm
					Mid-peak	20.1	10am-1pm, 6pm-9pm (Mo-Fr)	N/A	N/A
					Off-peak	6.9	All other times	6.9	All other times
					Special HEV recharge period	6.1	10pm-6am	6.1	10pm-6am
OH	American Electric Power	PEV: Plug-in Electric Vehicle Tariff <i>(Proposed)</i> ⁴⁴	- Separately-metered residential PEVs - PEV households	- Limited to 200 customers - Utility will rebate up to \$2,500 for L2 EVSE and separate metering	On-peak ⁴⁵	9.3	7am-9pm (Mo-Fr)	Same as summer rates	
					Off-peak ⁴⁶	1.3	All other times		
OR	State currently investigating PEV TOU rates ⁴⁷								

³⁹ http://www.nvenergy.com/company/rates/snv/schedules/images/GSHEVRR_South.pdf; http://www.nvenergy.com/brochures_arch/rate_schedules/np_com_rate.pdf.

⁴⁰ Table shows prices for commercial customers with PEV loads below 3,500 kWh per month. Customers that exceed this level are subject to different pricing. See *ibid*.

⁴¹ <http://www.nvenergy.com/home/paymentbilling/timeofusenorth.cfm>; http://www.nvenergy.com/company/rates/snv/schedules/images/RHEVRR_South.pdf.

⁴² http://nvenergy.com/company/rates/nnv/electric/schedules/images/OGS_HEVRR_TOU.pdf; http://www.nvenergy.com/brochures_arch/rate_schedules/spp_nv_commrates.pdf.

⁴³ Table shows prices for commercial customers with PEV loads below 10,000 kWh per month and that do not exceed 50 kW. Customers that exceed these levels are subject to different pricing. See *ibid*.

⁴⁴ This rate is before the Ohio Public Utilities Commission, as part of American Electric Power (AEP)'s proposed electric security plan. See

<http://www.puco.ohio.gov/puco/index.cfm/consumer-information/consumer-topics/american-electric-power-ohioe28099s-electric-security-plan/>;

https://aepohio.com/global/utilities/lib/docs/info/news/rates/OH/Sloneker_testimony_1232011_Final.pdf. On September 7, 2011, parties to the case stipulated to a settlement that, if approved, would, among other things, allow AEP to establish this PEV tariff. See <http://dis.puc.state.oh.us/ViewImage.aspx?CMID=A1001001A1107B05057D70465>.

⁴⁵ AEP's proposed PEV rate would apply the utility's existing residential energy storage rate, which is based on TOU, to PEVs. *Ibid*. The table lists the energy storage TOU rate for AEP's Columbus Southern Power (CSP). <https://www.aepohio.com/global/utilities/lib/docs/ratesandtariffs/Ohio/2011-10-14-CSP-StandardTariffNo7.pdf>. The proposed PEV rate would also apply to Ohio Power (OP), which AEP also owns and has proposed to merge with CSP. See <https://aepohio.com/global/utilities/lib/docs/info/news/rates/OH/ESPAPPLICATIONfinal.pdf>. Currently, OP's residential energy storage rates are 8.9 and 1.2 cents per kWh for on-peak and off-peak electricity usage, respectively.

⁴⁶ See note **Error! Bookmark not defined.**.

⁴⁷ The Oregon Public Utilities Commission (OPUC) is investigating PEV rate structures in docket UM 146. OPUC staff has recommended that utilities be required to offer PEV TOU rates. See <http://apps.puc.state.or.us/edockets/docket.asp?DocketID=15929>; <http://edocs.puc.state.or.us/efdocs/HAC/um1461hac16325.pdf>.

Attachment A: Currently Available Plug-in Electric Vehicle-Specific Electricity Rates

(Last updated on December 22, 2011)

State	Electricity Provider	Rate	Available to	Conditions & Incentives ²	Period	Summer Season ³		Winter Season ⁴	
						Price (cents per kWh) ⁵	Hours	Price (cents per kWh) ⁶	Hours
TX	Reliant Energy	EV Owner's Plan with e-Sense™ Time-of-Use ⁴⁸	- PEV households	- Minimum service period of 1 year	Summer peak	11.9	4pm-6pm (Mo-Fr)	N/A	N/A
					Standard	10.9	12pm-4pm, 6pm-8pm (Mo-Fr)	10.9	6am-9am, 6pm-9pm (Mo-Fr)
					Off-peak	9.1	All other times	9.1	All other times
	TXU	Energy PowerSmart PM 24 ^{SM 49}	- Residential customers ⁵⁰	- Minimum service period of 2 years	Peak	21.9	1pm-6pm (Mo-Fr)	N/A	N/A
					Off-peak	9.2	All other times	9.2	All other times
					Nighttime	6.8	10pm-6am	6.8	10pm-6am
VA	Virginia Dominion	1EV: Residential Service with Electric Vehicle Charging (Experimental) ⁵¹	- PEV households	- Limited to 750 customers - Minimum service period of 1 year - Experimental rate ends on 11/30/2014	On-peak	11.6	1pm-7pm	6.7	6am-11am, 5pm-10pm
					Intermediate	5.9	10am-1pm, 7pm-10pm	N/A	N/A
					Off-peak	3.7	All other times	4.2	All other times
					Super off-peak	0.4	1am-5am	1.4	1am-5am
		EV: Residential Electric Vehicle Charging (Experimental) ⁵²	- Separately-metered residential PEVs	- Limited to 750 customers - Minimum service period of 1 year - Experimental rate ends on 11/30/2014	On-peak	13.3	6am-10pm	Same as summer rates	
					Off-peak	3.9	All other times		
					Super off-peak	0.7	1am-5am		
					WA	Seattle City Light	Currently investigating PEV TOU rates ⁵³		

⁴⁸ This plan is not currently listed online, but is available to customers by phone. Information provided by Reliant Energy (<http://www.reliant.com>).

⁴⁹ <http://www.txu.com/about/press-releases/2011/20111117-txu-energy-offers-deep-nighttime-discounts.aspx>.

⁵⁰ TXU is marketing this rate to PEV households, but, based on the information available online, the rate does not appear to be restricted to PEV households. See <http://www.txu.com/en/residential/promotions/dsm/PowerSmart-information.aspx>.

⁵¹ <http://www.dom.com/dominion-virginia-power/customer-service/rates-and-tariffs/pdf/vab1ev.pdf>.

⁵² <http://www.dom.com/dominion-virginia-power/customer-service/rates-and-tariffs/pdf/vabev.pdf>.

⁵³ See <http://www.seattle.gov/light/electricvehicles/>.

Attachment A: Currently Available Plug-in Electric Vehicle-Specific Electricity Rates

(Last updated on December 22, 2011)

B. NON-TOU PEV-SPECIFIC RATES⁵⁴

State	Electricity Provider	Rate	Available to	Description
CA	Alameda Municipal Power	EV-X: Experimental Electric Vehicle Charging Discount ⁵⁵	- PEV households - Commercial PEVs - Separately-metered commercial PEV fleets	\$15 and \$21 per month discounts, respectively, for customers with light duty and medium duty PEVs (applied as a 6 cent per kWh discount on assumed monthly charging loads of 250 kWh and 350 kWh, respectively) or 50% discount on the metered kWh of a separately-metered fleet vehicle charging facility. Customers must agree to charge their PEVs during weekday off-peak hours (8pm-8am) and weekends. ⁵⁶
IN	Indianapolis Power & Light	EVP: Experimental Service for Electric Vehicle Charging on Public Premises ⁵⁷	- Public charging	Flat fee of \$2.50 per charge at public charging facilities. Experimental rate ends on January 18, 2013.
MI	Consumers Energy	REV-3: Residential Plug-in Electric Vehicle Only Monthly ⁵⁸	- Separately-metered residential PEVs	\$35 per month for the first 300 kWh, then 15.3 cents per kWh during the summer (10.5 cents per kWh during the winter) for each additional kWh used during the month. Limited to 250 customers. Utility will reimburse up to \$2,500 for L2 EVSE and separate metering.
	DTE	D1.9: Experimental Electric Vehicle Rate (Option 2) ⁵⁹	- Separately-metered residential PEVs	\$40 per month. Limited to 250 customers. Utility will reimburse up to \$2,500 for L2 EVSE and separate metering.
TX	Green Mountain Energy	Pollution Free sm Electric Vehicle ⁶⁰	- PEV households ⁶¹	100% wind energy plan for PEV households. Minimum service period of 1 year.

⁵⁴ Data are drawn from electricity providers' rate schedules and websites, as cited throughout, based on research performed by NRDC. NRDC identified an initial list of rates using data from the U.S. Department of Energy's Alternative Fuels & Advanced Vehicles Data Center (<http://www.afdc.energy.gov/afdc/>) and supplemented this list through additional research and information provided by individual electricity providers. This list may be an incomplete summary of PEV-specific non-TOU rates available from U.S. electricity providers.

⁵⁵ <http://www.alamedamp.com/assets/pdf/rates/7-1-2011/EVX.pdf>.

⁵⁶ Although customers must "agree" to charge their PEVs during off-peak hours, discounts are not applied based on measured off-peak charging, so this is not a TOU rate. See *ibid*.

⁵⁷ <http://www.iplpower.com/library/IPL/Tariff%20Changes%202011/Rate%20EVP%20effective%2001.19.11.pdf>.

⁵⁸ <http://efile.mpsc.state.mi.us/efile/docs/16446/0002.pdf>.

⁵⁹ <http://www.dteenergy.com/pdfs/detroitEdisonTariff.pdf>; <http://efile.mpsc.state.mi.us/efile/docs/16406/0003.pdf>.

⁶⁰ See <http://www.greenmountain.com/products-and-rates/electric-vehicles>; <http://www.greenmountainenergy.com/texas-centerpoint>.

⁶¹ Green Mountain Energy also offers other 100% wind products to non-PEV households, but this specific plan is restricted to PEV households. See *id*.

Illinois Commerce Commission
Initiative on Plug-In Electric Vehicles

Workshop 5 – Final Report
Developing a Petition to the Commission to clarify the
legal status of public charging stations.[1]

December 30, 2011

Introduction

The Illinois Commerce Commission (ICC or Commission) Initiative on Plug-In Electric Vehicles (PEVs), invited stakeholders to participate in informal workshops.

This workshop considered the issue of, “Developing a petition to the Commission to clarify the legal status of public charging stations.”

More specifically the Commission asked the workshop to consider the following:

“There has been general agreement among parties to the Commission’s Initiative on Plug-In Electric Vehicles that publicly-available charging stations should be deemed competitive services and therefore not be considered as public utilities. Many commenters requested a declaratory statement from the Commission to this effect, but the Commission does not appear to have authority under the Public Utilities Act to make a binding declaration on its own initiative.

“Under Title 83, Section 200.220 of the Illinois Administrative Code, parties may petition the Commission for a declaratory ruling with respect to the applicability of any statutory provisions enforced by the Commission. If workshop participants are interested in pursuing this path, they may work together to agree on the content of the petition and to select a party to make the filing.”

Does a Petition for Declaratory Ruling filed with the ICC present a tenable option for the Commission to make a determination regarding the public utility status of public charging stations?

Part 200.220 (83 ILAC 200.220) of the Commission's rules of practice provides for Petitions for declaratory relief to be filed by persons affected by the applicability of any statutory provision enforced by the Commission. Part 200.220(j) clarifies that a declaratory ruling only has a binding legal effect on the party making the filing. This provision is a reflection of the principle that Commission orders are not *res judicata* binding upon future matters brought before the Commission. Further, note that in *Mississippi River Fuels v. Illinois Commerce Commission*, the Supreme Court of Illinois commented that an ICC Order determining that an entity was not a public utility did not restrict the Commission from later changing its mind. 1 Ill.2d 609, 512; 116 N.E.2d 394, 396 (1953). Nevertheless, a petition for a declaratory ruling filed individually or jointly, by any stakeholder, can be filed as a matter of right.

To encourage the proliferation of EV charging stations in Illinois, the state requires clear adoption of a uniform policy on the legal status of Electric Vehicle Equipment and Service Providers (EVESPs) who are currently developing charging networks in collaboration with public and private property owners across the US, internationally, and increasingly in Illinois. EVESP industry stakeholders believe that early adoption of charging stations elsewhere has resulted from clarity and collaboration between EVESPs and government to provide the entrepreneurial flexibility needed for EVESPs to succeed and lay the foundations for a broad EV charging network.

In Illinois, regulation of EVESPs as public utilities or as RESs solely on the basis of their providing EV charging services would restrict their ability to function as competitive entities. Further, a regulatory system that recognized any entity selling electricity for transportation fuel as a public utility or RES could lead to unintended or undesirable scenarios. For example, conventional auto repair centers and towing services regularly recharge dead car batteries. If a vehicle using any type of electric propulsion system received a charge from one of these companies, the provider could effectively be classified as a public utility or RES.

In contrast, explicitly clarifying that an EVESP will not be regulated as a utility or RES if it is acting as a customer of a utility or RES could clear the path for more private investment in the industry. As has been noted in the current workshop, when an EVESP is connected to the customer side of the meter, it is no different than a hotel, apartment, or other property owner furnishing electricity, and these entities are not regulated as utilities. When an EVESP is connected to the customer side of the meter, it differs from traditional public utilities and RESs regarding the type of service it provides. In such cases, the primary function of an EVESP is to sell a service, not electricity. The role of an EVESP in this case is to facilitate easy access to charging stations rather than to distribute or sell power.

Across the US, state legislatures are adopting laws to clarify the legal status of EVESPs and promote rapid development of an EV charging network. For example, California recently adopted AB 631 into law, which states that “The ownership, control, operation, or management of a facility that supplies electricity to the public only for use to charge light duty plug-in electric vehicles does not make the corporation or person a public utility within the meaning of this section solely because of that ownership, control, operation, or management.” §216 (i). Similarly, Minnesota law states that a “Public utility” . . . does not include . . . a retail seller of electricity used to recharge a battery that powers an electric vehicle, as defined in section 169.011, subdivision 26a, and that is not otherwise a public utility under this chapter.” Statute 216B.02, Subdivision 4.[2]

The Citizens Utility Board (“CUB”) believes that at this time, PEVs are the functional equivalent of any other consumer appliance, therefore the Commission likely does not have jurisdiction on this issue. Given the small scale of PEV adoption likely to occur over the next few years, and the low demand profile of most Level 1 and Level 2 charging stations, CUB sees no reason to preliminarily classify charging stations and any related infrastructure. As the Commission better understands how PEV infrastructure will impact the distribution utility, including what demands for public charging infrastructure are anticipated, the Commission can revisit the question of whether it needs to classify this infrastructure in any way different than existing distribution infrastructure. Before making any designation the Commission should consider the impact on its ability to regulate the behavior of the utility, the customer, and the infrastructure service provider.

The workshop participants recognized that a declaratory ruling might not resolve all potential questions that could be applicable to the Commission’s jurisdiction over charging stations. Further, as noted above, the ruling might apply only to the party submitting the petition, and the Commission could conceivably arrive at a different conclusion if asked to rule on a different question. Given these potential disadvantages of a single party seeking a declaratory ruling, the participants discussed how the regulatory status of charging stations could be definitively resolved. The workshop participants agreed that legislation pertaining to charging stations adopted by the General Assembly would be the most direct way to determine the extent, if any, of the Commission’s jurisdiction over charging stations.

However, this consensus is not unanimous. In particular, it is CUB’s position, as detailed in its attached comments, that it is premature at this time for the ICC to take any action on the legal status of charging stations.

In addition, it is the recommendation of the workshop participants (except the timing as noted by CUB) that the Commission coordinate with the Illinois Electric Vehicle Advisory Council to explore recommending new state legislation, promoting uniformity of policies and laws assuring the continued development of an accessible and convenient EVESP charging network throughout Illinois supported by open and competitive markets. [3]

Notes

[1] **Disclaimer:** This report is for discussion purposes only, intended to be in furtherance of the goals of the PEV workshop. This is not intended as a legal opinion and should not be relied upon as legal advice or counsel. Parties with legal questions or concerns should consult an attorney with regards to the matters discussed in this report. The conclusions expressed here are subject to change and not intended as any commitment or waiver of rights on behalf of Any Party.

[2] In Washington, chapter 80.28 RCW 25 also exempts EVESPs from the state's public utility regulations; however, it is noted that the Washington law broadly provides that the State "shall not regulate the rates, services, facilities, and practices" of EVESPs, which could be interpreted as exempting an EVESP in Washington from *any* future regulation rather than simply from regulation as a utility. To avoid limiting Illinois' ability to act as necessary in the future, it would be more practical and more prudent to state simply that providing EV charging services does not by itself subject a business to utility regulation.

[3] If the General Assembly were to take up this issue, consideration should be made for an EVESP exemption under the Public Utilities Act for EVSP companies that simply wish to act as customers of utilities or RESs.